

THE
PHILIPPINE
CRAFTSMAN

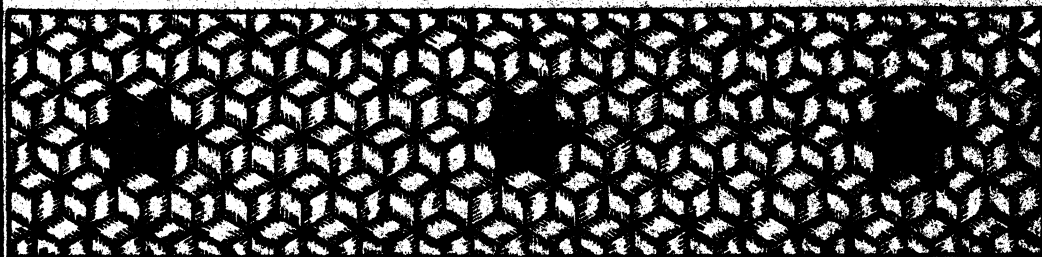
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The Philippine Craftsman

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MANILA, FEBRUARY, 1914

No. 8

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**The first farmer was the first man, and all historic
nobility rests on possession and use of land.**

—Emerson.

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SPAIN'S CONTRIBUTION TO PHILIPPINE AGRICULTURE.

By AUSTIN CRAIG, Assistant Professor of History, University of the Philippines.

AGRICULTURE in the Philippines, according to later Spanish writers, might be believed to have begun with their countrymen's coming, while Dr. Regidor, a comparatively recent Filipino authority, attributed to Japan the invention of Filipino agricultural implements. But China, Japan's teacher, is now known to have been acquainted with these Islands almost as early as she was with the insular kingdom to their north, and pre-Hispanic conditions may yet be realized from a study of non-Christian tribes who never came under Spanish influence. Among the Ifugaos, for instance, are to be found effective cementless stone dams, irrigating ditches running for miles along precipitous hillsides, even crossing the faces of cliffs, and irrigated terraces extending for thousands of feet up the mountain sides, constituting, as Professor Worcester once wrote, "impressive examples of primitive engineering * * * beside which the terraced hills of Japan sink into insignificance."

The Italian chronicler of Magellan's expedition too, was impressed with the abundance of provisions in the newly found archipelago, and mentions that the inhabitants nearly all tilled their own fields. Morga, almost a century later, regrets that the natives have forgotten much about farming, poultry and stock raising, and cotton cultivation since the Spanish conquest. This decline may be in part attributed to the rapacity of the "encomenderos," the Spanish conqueror's companions who were rewarded by making them feudal lords over the natives, partially to the advice of the friars who did not want their new converts' wealth to tempt Spaniards to such cruelties as had been practiced in the Americas, and in greater measure than to either of the foregoing, probably, to the unsettling influence of simultaneous sudden and radical changes in government, religion, and social and economic conditions.

Yet it is likely that among the *encomenderos*, rough soldiers of fortune but likewise ready, some saw and suggested improvements over old ways, and, as the religious teachers were mostly from Spain's country class, not a few of the friars probably proved proficient farmers.

Gov. Joseph Basco y Vargas in 1784 attempted to compel observance of paternal laws of the Indies which had come to be disregarded, but he was not political economist enough to recognize how much more important individual ownership of farms was than the distribution of community lands and that supplying capital to the farmers was the way to prevent usury. Of equally good intentions and wiser in its workings was the Economic Society of the Friends of the Country which he had founded three years earlier.

Of this society's strictly agricultural activities, the first was endowing a professorship of agriculture in 1823. At the same time a competition was opened for essays on "The Causes Which Hinder the Development of the Agriculture of the Country." Six years later, three machines for hulling rice were obtained from North America, and in the meanwhile, manuals on the cultivation and preparation of indigo (a reprint) and on the cultivation of coffee had been distributed. The society, too, encouraged the Government's project of establishing a bank which it was hoped would furnish capital to the planter.

Before 1850 investigation was made of the practicability of cultivating the poppy and making opium in the Philippines; cash awards were paid planters who had over 60,000 coffee plants in readiness for the second crop; a prize was offered for the invention of a machine for combing abaca fiber; support was given a second attempt to acclimate in the Islands the martin, a bird which destroys locusts; and an exhibit of Philippine products was provided for the London exposition.

Likewise Philippine sugar-cane seed had been sent to Hawaii, Cuba, and that of rice to Sevilla, in Spain; a horse and two mares of superior blood had been imported for breeding; attempts were made to acclimate tea from Java in the Philippines; data on silk culture were collected; and the propagation of sea-island cotton from seeds obtained from the United States, attempted.

In 1836 machines for hulling rice by steam power and on a large scale were introduced, and in 1834 abaca was exported for the first time. The manila hemp industry, as it was called, was developed through the American commercial house of Peele, Hubbell & Co., and supplied American shipping with cordage. A monument to Mr. Hubbell, the first American consul, who

inaugurated the trade, stands in Plaza Cervantes, Manila. In 1843 a steam machine for extracting abaca fiber was imported.

In 1854 a commission was appointed to report to the society upon the existing state of agriculture in the country and the obstacles which would have to be removed for its complete development, this materializing in 1859 in a project regarding agriculture and commerce.

May 26, 1862, the society recommended, in an exhaustive report, the establishment of a school of agriculture, combining practice with theory, in Manila, and three years afterward a monthly contribution was begun for the botanical garden, as a practical school of botany.

The next year the Batangas cattle fair was granted seven cash prizes; in 1867, ₱500 was appropriated to purchase plows, spades, and other farming implements for the sufferers from a terrible inundation in Abra and Ilocos; and in 1868, gold and silver medals were offered for monographs on "The Means which the Government and the Society Can Employ to Secure the Development of Agriculture in the Country." Among these means seem to have been considered the establishment of a savings bank and public loan office, and an annual fair and exposition at Manila. Likewise a commission was appointed to consider the possibility of an agricultural bank. Bulletins were published on the cultivation of coffee and cacao, the abaca industry, and the cultivation and manufacture of sugar.

The termination of the Government tobacco monopoly, in the early eighties, was a big advance, compulsory planting rules having even led at times to the whipping of farmers whose returns had been unsatisfactory.

Notable mentions are found of exporting rice, of a hundred kinds of rice from the Visayas, regarding getting two rice crops a year, and encouraging the use of wheat flour, probably in a time of rice shortage.

Nothing particularly new differentiates the present projects from the past, but the great contrast in policy is that individual initiative is fostered rather than governmental control, and in practice one cannot help but recognize that how is being *done* what formerly was *talked*.

Besides the name of Hubbell, in connection with abaca, there are those of Looney, an Englishman, who started the sugar industry in the south, and Reynolds, an Englishman naturalized in America, who began the copra trade. These three lines yet remain the Philippines' most important exports outside of tobacco.

WHAT THE PHILIPPINE PUBLIC SCHOOLS ARE DOING IN AGRICULTURE.

A BRIEF account of what is being done in the public schools at present is here given, although many of these features are fully discussed in special articles in this number. The work centers around many projects and types of work in order to make the instruction entirely practical and easily assimilated by the people of the community where it is given.



Learning to weave, Aborlan Agricultural School.

The work may be tabulated under the following headings: (1) Agricultural schools, (2) farm schools, (3) settlement farm schools, (4) school and home gardening, (5) food campaigns, (6) nurseries and tree planting, and (7) yard improvements.

AGRICULTURAL SCHOOLS.

The Bureau conducts four agricultural schools where the pupils are subsisted and where dormitory accommodations are provided. These schools are located at Mailag, Bukidnon; Bunauan, Butuan; Aborlan, Palawan; and Muñoz, Nueva Ecija. Large

farms are cultivated and the boys spend one-half of their time in studying farm mechanics and in doing field work. Last year 131 hectares (327 acres) were under cultivation. Animals and tools best suited to the conditions of Filipino farm life are used. This necessarily reduces the cultivated hectarage, as small implements drawn by single bullocks are employed. Furthermore, they are schools where principles are taught, as well as farms where products are raised. The largest of these schools is the Central Luzon Agricultural School, Muñoz, Nueva Ecija, which controls a farm of 657 hectares (1,642 acres) of which 130 hectares are under cultivation. The school has a faculty of nine instructors and is attended by 174 students. Products to the value of ₱7,500 were produced last year, which was exclusive of the garden produce grown for school use and the construction and repair work done on the farm as a part of



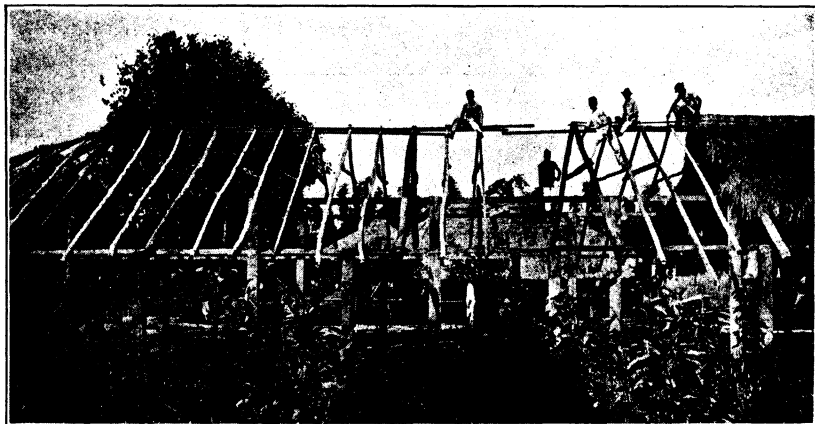
Manobo baseball team, Bunauan Agricultural School.

the work in farm mechanics. Figures for the present year are not available, but under favorable conditions an increase of 30 per cent will be secured.

FARM SCHOOLS.

These schools are special types of intermediate schools giving instruction in the fifth, sixth, and seventh grades. The three years' work includes a study of agricultural texts and other academic branches and daily practice work in the field or shop. The schools are operated in connection with a model farm of from 10 to 12 hectares (25 to 30 acres). The schools are day schools of a coeducational type with special emphasis upon the introduction of all work into the homes by means of supervised demonstration work. Special domestic-science work is given the girls. The farm itself is developed as a model Filipino farm and in this manner is used to teach practical farm

management. The girls do the work of the three-year course in housekeeping and household arts in the same practical manner that the farm work is taught the boys. This type of school has been selected as the one most suited to the present needs of the Christian provinces and is being extended as rapidly as funds and facilities are available. At present eight successful schools are conducted at the following places: Batac, Ilocos Norte; Indang, Cavite; Guinobatan, Albay; Ballesteros, Cagayan; Iba, Zambales; San Carlos, Pangasinan; Tacloban, Leyte; and Batangas, Batangas. Recent reports show an enrollment of 1,127 boys and 212 girls at these schools. Through the system of home extension work many practical farmers and large numbers of country people are reached.



Practical farm mechanics, Batac Farm School.

SETTLEMENT FARM SCHOOLS.

The home environment of the non-Christians is such that agricultural work adapted to the settled regions is hardly suited to their immediate needs. The people have for several generations lived more or less nomadic lives and have practised the crudest form of agriculture. As a whole, it consists of but little more than the burning off of a small area and planting it with a few plants, mostly roots. Little if any cultivation is given the land, either before or after planting, as after two or three crops have been harvested grass begins to take the field and the farmer moves to a new clearing. Seldom are the services of work animals used and but few tools are utilized.

Small farms of from 3 to 5 hectares (8 to 12 acres) are established as the basis of a settlement farm school, and a schoolhouse and teacher's cottage built. From the day that the pupils enter the school they are taught the rudiments of English, farm work, and certain household industries. Practical work occupies one-half of the school time. The boys are engaged in learning to use work animals and agricultural tools and in producing food. The girls assist with the farm crops during the harvest, but at other times are taught plain sewing, cooking, and simple household industries. In most schools the girls are taught to weave the cloth for their clothes. The farms are worked on a communal basis and each pupil takes his share of all harvested products to his home for family consumption.



Schoolhouse, Bugcaon Settlement Farm School.

Often the food received from this source practically feeds the settlement at certain seasons of the year.

The permanent development of the country is assured through this means, as under the influences of these farms permanent settlements and, in some instances, villages of considerable size have sprung up. The parents themselves have taken up adjoining land and are using animals and tools in the manner in which the boys are taught. These schools have been established in the following numbers: Twenty-one in the Province of Agusan for Bukidnons, twenty in Agusan for Manobos, one in Zambales for Negritos, two in Nueva Vizcaya for Igorots, and three in Nueva Vizcaya for Ilongots. Approximately 100 hectares (250 acres) are now under cultivation at these schools.

SCHOOL AND HOME GARDENING.

Gardening is prescribed as a definite requirement in all primary and intermediate schools, except those offering the trade course, the business course or the course in housekeeping and households arts. The work consists of school gardens and home extension work in the form of required home gardens which the pupils must cultivate. Upon this work they are graded and for it credits toward promotion are given. All features from seed selection to the use of vegetables and seed preservation are taught in a very practical manner.

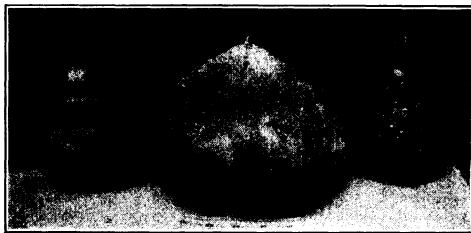


A field of Moro corn, Indang home project No. 4.

Native vegetables and especially those which are common in the community and well liked by the people are preferred for the work. The extension of gardening into the homes has met with marked success. Reports for the school year 1912-13 show that school gardens are maintained at 2,310 schools and 35,719 pupils have home gardens. An area of 115 hectares (287 acres) is under cultivation and 58,031 boys and 5,036 girls are instructed in vegetable growing.

FOOD CAMPAIGNS.

Special work with the object of furthering either the production or the use of some food has received attention as an integral part of the agricultural education given in the Philippine public schools. It has taken the form of added emphasis to legumes and yams with the object of seed selection, plant improvement, and distribution of desirable types. Sweet potatoes have also received special emphasis. The most important campaign



Edible gourds.

is the one to promote the growth and use of corn in the Philippines. This work is now being conducted for the second year. Legumes are included with the corn, both as an agricultural feature of production and as a human food. Very successful re-

sults have been secured, though the work may now be considered as having just well begun. Latest reports show that 43,561 boys are engaged in corn growing and that 6,000 girls are being instructed in ways of preparing palatable corn dishes with the simple ingredients and cooking utensils common in the average Filipino home. By means of lectures, posters, and follow-ups, a large percentage of the people have been reached. The food campaign work in the Philippines is unique in that special stress is placed upon the preparation of harvested products as a human food. It is estimated that more than 300 corn demonstrations will be held this year and that in connection with the lectures and corn exhibits 1,000,000 people will be reached.



Making starch from cassava, Albay Provincial School.

NURSERIES AND TREE PLANTING.

The impetus given the propagation, improvement, and distribution of desirable flowers, shrubs, fruit trees, and other trees of either ornamental or direct economic value in the public schools has been gaining headway each year. These nurseries which are as yet very simple in nature have been established at all intermediate and many other schools. Thousands of valuable seedlings and other desirable plants have been grown. The combating of tree pests by simple methods, pruning, and the caring for young trees are taught in a practical way. The work is taken into the homes



Chicos, an excellent Filipino fruit.

by having the pupils each year plant and care for a few trees as a part of their home industrial requirement. The work as yet is simple in nature, but it will make a basis for future development work along this line. Recent figures show that 94 school nurseries are maintained and that 46,687 trees and young

plants are growing in them. The tree planting idea prevails throughout the year. Available figures also show that 53,439 fruit trees and 13,633 shade trees were planted and cared for by pupils during the past school year.

YARD IMPROVEMENTS.

Knowing that farm homes must be attractive if the most energetic boys are to be kept on the farm, the improvement of the school premises and the introduction of similar conditions at the homes are encouraged. Permanent concrete schoolhouses are constructed, lawns and playgrounds laid out, and sanitary arrangements looked after. All pupils of the primary grades are required to take an active interest in the care and improvement of grounds. During the first year of the intermediate course each pupil is required to devote one industrial period each week to work on the school grounds. The work is taken into the homes in an indirect way by the teacher on his weekly inspection trips to the home gardens. By means of home credits and certificates of merit it is planned to further encourage lawn making as well as shrub and flower culture at the homes. From recent reports it appears that 1,032 schools own sites of one-half hectare ($1\frac{1}{2}$ acres) and more; that 198 schools have their grounds inclosed with permanent fences; and that 312 schools have made lawns and otherwise improved the grounds.

The agricultural activities of the Bureau of Education are best demonstrated by the fact that through some form of instruction 500 hectares (1,250 acres) are actually being cultivated by Filipino schoolboys under the direct supervision of teachers. This land is divided into some 50,000 different tracts varying in size from a boy's home garden of 16 square meters to the 130 hectares cultivated at the Central Luzon Agricultural School. Taken as a whole, our work is a great system of practical demonstrations conducted and studied by the people themselves. The plan is both to improve that which exists and to secure better results under the exact conditions which are encountered at the homes. Only after their merit has been established are new plants, tools, and methods introduced.

Bodily labor alleviates the pains of the mind; and hence arises the happiness of the poor. (La Rochefoucauld.)

o o o

Labor rids us of three great evils—irksomeness, vice, and poverty. (Voltaire.)

SCHOOL AND HOME GARDENING.

By NORTH H. FOREMAN, Inspector of School Gardens and Sites.

THE educational value of gardening is so apparent that it has taken its place in all Philippine public schools of primary and intermediate grades. It has been correctly stated that our object is not to teach the business of farming in these gardens, but to inspired a love for the country and to develop the natural tendencies of childhood to become interested in growing plants; to let the child witness the ways of nature as the tiny seed bursts into life and gradually but surely develops



A typical school garden, Barili, Cebu.

into a mature plant which yields a reward for the care given it in the form of food for the grower.

School gardens are not intended to make gardeners or farmers, but to afford the growing boy or girl an opportunity for many-sided development. Character and efficiency are formed by an outdoor life united with knowledge of natural forces and their laws. From the standpoint of the child's interest and good, this study is one of the finest examples in teaching, for through it theory is joined with practice and every thought sees its fulfillment in action. The pupil is given a plot of ground in the school garden for his own. He prepares the soil, plants the seed, cares for the plants, and takes the products as a true reward for his

work. In this manner the gardens are made to serve their purpose as fully as possible. The boys become little landowners who are thus allowed to taste the sweet fruits of their labor.

The work, however, as carried out in the public schools of the Philippines goes farther than this, for it emphasizes the home gardens which are maintained at the homes of the pupils as required industrial work, under the supervision of qualified teachers. In this manner the work is made very practical, since the natural difficulties encountered at the boys' homes are met and are overcome to the extent that successful gardens are common. In this respect it is true vocational training.



Thorough preparation insures results—
Gerona, Tarlac.

Among the many reasons for encouraging garden work is the fact that the garden is a good wholesome place for a boy. He learns to recognize the many benefits of his own work. It is a healthful pursuit; it makes stronger and better men and women, and will prove a permanent source of pleasure and profit to them. It develops in the pupils a sense of order and neatness, besides teaching appreciation of nature, regard for the property of others, self-reliance, and respect for labor. Again, it promotes habits of industry and furnishes useful employment as well as amusement to children who would otherwise seek un-

profitable diversion; it also affords the means of acquiring manual skill and of gaining some knowledge of soils, plants, and insects.

Gardening as a definite requirement for boys enrolled in primary and intermediate grades of the public schools is a part of the system of giving industrial instruction by means of practical work adapted to the everyday life of the pupil. This extends into the home activities as home gardening. Teachers inspect this work one or more times each week and give home credit as a recognized part of the regular school work. In making the inspection trips the teacher becomes acquainted with the people, gets to know his pupils both at home and at school, and is thus enabled to exert a greater influence for the general uplift and develop-

ment of the community. Planting and cultivating are taught in a manner which emphasizes the value of attention to details. The school garden proper may be but little more than the place where the general principles of garden instruction are worked out. Results secured at the school are best judged by the way the agricultural work is extended into the home life rather than by the condition of the school garden and the school grounds.

The place that this work occupies in the Bureau of Education is an important one. With the first American teachers who arrived in 1901, there came the new era of labor standards and added emphasis upon bettered home surroundings and food con-

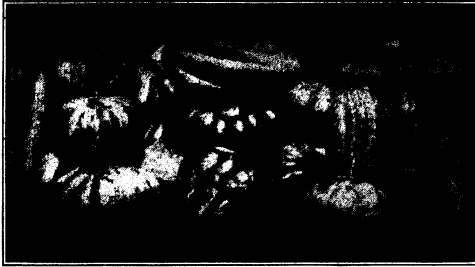


The whole class at work.

ditions. Here and there gardens were started, but it was not until 1904 that the vegetable garden was given a definite place in the school work. In this year Dr. David P. Barrows, General Superintendent of Education in the Philippines, directed that all primary schools should have a garden and each boy of the third and fourth grades should be given a plot of his own. The work was extended until now gardening holds a most important place in the industrial instruction given in the schools.

The place of gardening is clearly stated in the course of study which offers two years' work in vegetable gardening in schools giving the full primary course and one year in barrio schools

of two grades. The work is optional by academic grades, by which is meant that pupils may choose the work for two or more years. While gardening is an optional subject for pupils, it is a definite requirement that all schools have a minimum-



Grown at school.

size garden class. The requirements of the course are based upon the physical ability of the boy, his liking for the work, and the facilities at his home for a home garden which must be not less than four times the area of his plot at school. The character

of the work undertaken is in some measure dependent upon the kind of soil and the extent of the site, but even in the least desirable localities where a school garden itself is not feasible, the full requirements of this industrial course are met in the homes of pupils by the cultivation of successful home gardens.



Preparing a school garden, Manila.

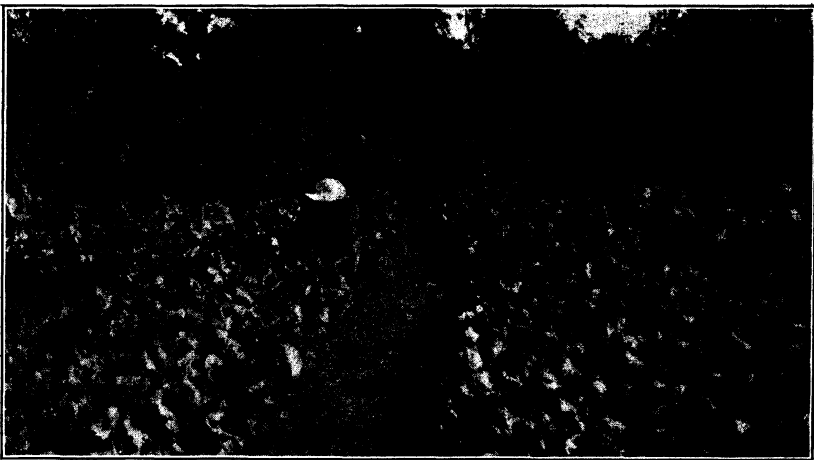
Vegetable gardening is continued in the intermediate grades for a full year in all courses except the housekeeping and household arts, trade, and business courses. Certain intermediate schools where unusual facilities exist for this work are given permission

to do three years of gardening. Throughout the entire primary and intermediate courses the main emphasis is placed upon the improvement and distribution of native types of vegetables. Pupils are taught to prepare the soil, cultivate plants, choose plants for their ultimate improvement, combat plant enemies and diseases, save seeds, prepare vegetables for food, and to select plants suitable for each season in order that food may be available throughout the year. The work is practical in nature and experiments are eliminated. Good harvests of desirable vegetables are sought. The keynote is the home garden. It is expected that 80 per cent of a boy's work will be at his home where he may use the products as a part of the daily food supply of the family.



A little home gardener.

That part of gardening which pertains to the making of lawns, planting flowers and shrubs, and in many other ways making the home more attractive and a better place in which to live is



A productive garden.

covered in the course of study by what is called "school-ground improvements" and in tree planting which culminates in Arbor

Day. All pupils of the primary grades are required to take an active part in the care and adornment of the school grounds. In the fifth grade this work is a required industrial subject for one industrial period each week. The work is taken into the home by means of tree planting and special home improvements for which industrial credit is given the pupil.

An important feature of the work is the establishment of school nurseries for the propagation and distribution of young plants, of fruit and forest trees, as well as flowers and ornamental plants. This work is quite popular and fills a long-felt need as there is no place in the Philippines where such plant materials may be secured. This movement marks the beginning of better fruit culture and the distribution of desirable varieties of many excellent fruits now available only in scattered localities.



Healthy recreation.

The results which are being secured are best shown by the statistics compiled from latest reports. That 2,310 of the 2,934 schools for which gardening is a possible industrial subject had school gardens, means real live educational work. It is also a fact that 63,000 pupils did field work in the vegetable gardens at school, in caring for the shrubs and ornamental plants of the school yard, or in cultivating the 35,719 home vegetable gardens. In this manner at least 38,000 actual demonstration tracts were successfully supervised by teachers and products to the local value of many thousand pesos were produced. Food plants known to be appreciated by the people are emphasized.

It is believed that agricultural education stands out as a unique as well as a highly efficient system in the Philippines. As home gardens, the work is taken to the homes and well supervised. Parents, pupils, and neighbors as well are taught both by precept

and example. Through the impetus given flower culture and lawn making, homes are made beautiful in this tropical country where such work has been so badly neglected.

Here in this country the economic value of gardening has a more important place in the development of natural resources than in many higher civilized communities. The greatest economic importance lies in the home work so carefully supervised and graded as a requirement for promotion. The scheme of gardening furthermore comprehends school gardens, home gardens, and food campaigns. The school curriculum provides admirably for extending this work into the homes of the people as practical continuation work. If home conditions in the Phil-



A well-planned garden, Batangas.

ippines are to be improved practical methods of dealing with the questions of food supply and right living must be taught in the schools. What has already been accomplished has resulted in a better and more desirable food supply for Filipino homes. The people are learning how to live more wholesome lives, how to provide for the family table, and how to prevent so much actual want. Further evidence of the success of this work is seen in that vegetables once rare are now a common food in all communities. Previous to the introduction of home gardening desirable vegetables were so scarce in certain localities that they were sold at prices beyond the means of the ordinary people.

Along with the maintenance of the food supply for the table should be considered the amount of money which the boy realizes

from the home garden. A boy learns early in life to receive some of the financial returns for his labor. The few centavos which the boy carries in his pocket to jingle with pride before his companions or to spend for any of the many things a boy wants, means much more in the education and training of the boy than any amount of money that his father or mother may be able to give him.

DECEPTION DIFFICULT IN SHOPWORK.

The more concrete the work in hand, the less likely is doubt and uncertainty to play a part. In grammar or history, a mistake upon the pupil's part may easily pass unchallenged. The student glides over an error consciously or without intent; and even the teacher may not detect the fault. In a word, both teacher and pupil may be deceived. In the shop or in the cooking room it is quite different. Be the box too long or too short, the metal too thick or too thin, the joint too loose, the basket askew, the stitches uneven, or the ingredients improper in proportion, little doubt need enter the pupil's mind as to the *rightness* of his work. He can see and have pointed out to him the fault or defect, and can himself usually tell when the same is remedied.

How often do we find the pupil in his book lesson, believing thoroughly that he understands the subject, when later it becomes apparent that he does not. Simply repeating something, memorizing a statement, or working through an abstract problem does not prove that there is an understanding of the same.

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THE COUNTRY BOY'S CREED.

I believe that the country, which God made, is more beautiful than the city, which man made; that life out of doors and in touch with the earth is the natural life of man. I believe that work is work wherever we find it, but that work with Nature is more inspiring than work with the most intricate machinery. I believe that the dignity of labor depends not on what you do, but on how you do it; that opportunity comes to a boy on the farm as often as to a boy in the city; that life is larger and freer and happier on the farm than in the town; that my success depends not upon my location, but upon myself; not upon my dreams, but upon what I actually do; not upon luck, but upon pluck. I believe in working when you work, and in playing when you play, and in giving and demanding a square deal in every act of life. (Edwin Osgood Grover.)

THE VILLAR SETTLEMENT FARM SCHOOL.

By W. J. CUSHMAN, Supervising Teacher.

ONE day in 1907, the provincial treasurer at Iba, Mr. J. W. Ferrier, remarked that he had ₱500 in the treasury that belonged to the Negritos in the mountains. The opening of a Negrito school was suggested. The provincial board agreed to the starting of the school, but favored the undertaking on an elaborate plan. It was agreed, however, to begin on a small scale and then expand as results justified and experience dictated. About ₱40 was spent on the first



Boys at work on the farm.

schoolhouse, which was destroyed a short time later by a baguio. The Director of Education was then asked for ₱150 with which to replace it. He allotted ₱300, which built the older of the two buildings now in use. The school was started with one teacher, a chart, and some slates and pencils. A small garden was begun with hoes as the only working tools. Later two more teachers were added, one to teach plowing to the men and the other to teach weaving to the women. The weaving was started with one loom, others being added as occasion demanded until there are now fourteen. The girls are taught to make the cloth which they weave into clothes for themselves, for the boys, and for

the smaller girls of the school. There are a number of girls who can, alone, put material into the loom, weave it out, cut and make it into clothes for either boys or girls, and wash, starch, and iron these clothes in a very creditable manner. This in itself is not unusual; but when it is taken into consideration that probably not one of these girls had ever seen a loom, a pair of scissors, or even a needle prior to the opening of this school, then the progress seems satisfactory.

The plowing, which was intended to replace the "cañgin" plan with the men, was not so successful at first. After a year's trial it became apparent that the Negrito does not like to work and makes the women and, to some extent, the children do most of the work. The plan of teaching the men to plow had to



Making Zambales baskets.

be almost abandoned at that time, so farming was taken up with the boys in the school. This proved fairly satisfactory and at present there are about 6 acres under cultivation. Now, however, the men have noticed that their children have grown almost 100 cavans of palay a year for the past three or four years, and they are manifesting a desire to learn to plow. There were probably 4 acres sown to palay the past year by the men of the barrio. One cannot reason with these people. They have to be shown. They must see a thing done with their own eyes, and that more than once, before it has any effect. Since they have seen and have been convinced, they are beginning to plow and plant.

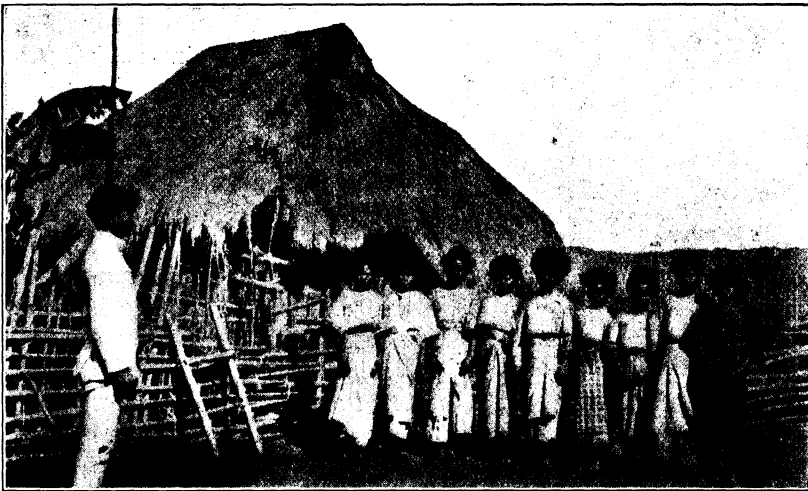
The Villar Settlement Farm School is located about 20 miles

from the municipality of Botolan, up in the Zambales Mountains on the edge of a Negrito reservation of about 4,000 people. This territory includes most of the mountainous or upland district from the municipality of Botolan to the military reservation of Olongapo in southern Zambales, and contains some excellent land for upland farming and stock raising and some suitable for lowland rice.

The conditions that lead to the establishing of this school were about as follows:

1. There was constantly accumulating in the provincial treasurer's office the pro rata of internal revenue due the Negritos which had to be spent for their benefit.

2. The Negritos in the highlands have been from time imme-



Negrito schoolgirls.

morial a constant menace and drawback to the people of the lowlands of the province. The school is proving to be a great civilizer of those near it.

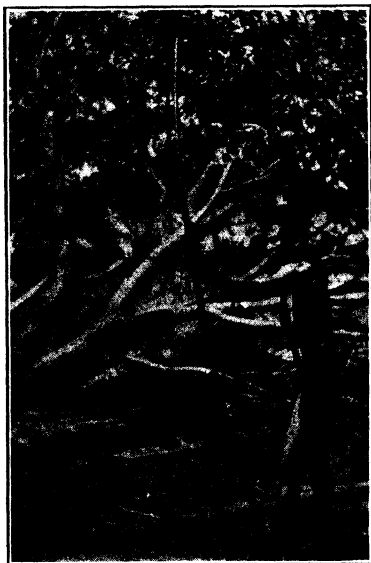
3. There is a large section of very fine land for farming and stock raising inhabited by almost 4,000 Negritos. The Negritos made no use of the land themselves and no one else could use it. This was a disadvantage to the province. If the Negrito could be taught to cultivate this land in a practical manner it would not only be a blessing to him but also a source of revenue to the province.

The school was started as an experiment with these objects in view, and is yet an experiment. The Negrito is still an unknown quantity to the outer world in so far as education and civilization

are concerned. No one knows just what can be done with him along these lines, how it can be done, or the best way to do it. About the only changes that have been made in the original plan of the school were practically to abandon for a while the plan of getting the men to plow instead of following their "caingín" plan and to increase the amount of industrial work in the school.

As the work is conducted now, we give the pupils about two hours each day, six days in the week, and fifty-two weeks in the year, of classroom work (reading, writing, drawing, arithmetic, spelling, etc.) and three or four hours industrial work, principally hand weaving, farming, and stock raising for the boys, and loom

weaving, mat weaving, sewing and general housekeeping for the girls. In addition to the regular hours of school work, academic and industrial, the boys attend to their stock, and the girls cook, wash, and iron for the school. All the pupils board at the school and the girls of the school do the cooking. The girls are divided into three groups with one or two of the larger girls at the head of each group. One week one group cooks and washes dishes, another group washes and irons the clothes for the entire school, and the third group cleans the rice and tends the pigs and chickens. The groups change work weekly, so as to give each



The Negrito hunter.

girl practice in all kinds of housework. The work is at all times under the supervision of the teachers of the school.

The ground is sown to early or highland palay, in May. In October this is harvested and the ground immediately planted with camotes and corn. These camotes are dug the following April and the ground sown to palay again. This gives two crops each year on the same ground with a minimum of work. One is a tuber and the other a grain crop. We are just harvesting a palay crop that will produce almost 100 cavans and are planting camotes as fast as the palay is removed. The pupils are clearing and cultivating a new field intended to be an orchard or fruit

farm. Here we are planting such fruits as bananas, papayas, etc. In addition to this we are also planting langca, casuy, mango, and kapok trees around the fences which are to serve the double purpose of fruit trees and fence posts.

The people of the barrio and its surrounding community have allied themselves with the people of the lowland and with the Government. They regard their barrio and themselves as a part of the municipality. They are prompt to inform the proper authorities if anything goes wrong in the interior of the Negrito reservation. They always speak of the Negritos of the interior as wild, and regard themselves as a part of, or at least to be classified with, the lowland people, and hence more cultured than their kinsmen of other localities.



Indoor baseball.

They now take their products to the lowland markets, whereas before the school was established, lowland people came after the products. This gives the Negritos a better understanding of the current prices of what they sell and what they buy, and makes them less likely to be imposed upon. Going to the pueblo and mixing with the lowland people is in itself a great civilizing force.

They take more pride in dress now than formerly. They almost always "dress up" when they go to town, when they are called in "junta," or when they have a distinguished visitor. A number of the women carry umbrellas when they go out.

They are building better and larger houses than formerly. We allow them the use of the school carabaos for hauling the material and some of them are constructing very respectable dwellings.

They do less moving from place to place. This barrio has

come to be as stable as many barrios of the lowland people. They are planting trees about their houses and regard the land where these houses stand as their own individual property. Many of them have hogs and chickens.

They are beginning to farm near the barrio with the school carabaos, the thing we failed to get them to do at first. Several of them have little haciendas near their houses, which they plant to palay and camotes each year. Most of these increase the amount of land cultivated from year to year, and the number wanting to plow constantly becomes greater.

The school has had a marked effect on the working capacity of the pupils. The Negrito is a child in every sense of the

term, especially in his ability to work. In the kind of work he is accustomed to do he can accomplish but a very small amount in a given time. When we began doing farm work with the pupils, the only one who made any pretense of working was the one whom the teacher was immediately urging. When the teacher left one pupil to go to another, that pupil immediately ceased working. If the teacher consumed much time in going from one pupil to another there was just that amount of time in which no work was being done at all. Now it is possible to get quite satisfactory



The assistant teacher of weaving.

work out of the older pupils, at least ten to twelve times the amount accomplished at first. This is true of both boys and girls, but more especially of the boys. The same thing has been experienced, but to a much less degree, with the men whom we have employed to repair the schoolhouse.

The pupils are fed at the school and do their own cooking. The Government supplies what the school does not produce. When the Government is feeding the school it costs less than ₱0.04 per day per pupil, yet they show plainly how much better they are fed than those not in school. When the school was first opened, one might have been there a week and never have heard shouting or laughter from any of the children in the barrio.

Now, however, almost every evening one can hear them laughing and singing like the lowland children. The school has put new life into them.

The greatest difficulty with which we had to contend was keeping the children in the school regularly. The Negrito is but a child and changes his mind with every change of the moon, if not oftener, and that change of mind may mean a change of location or something else just as detrimental to the best interests of the school. This one question has given us more trouble than all others put together. It is for this reason we are trying to induce them to plow and plant something, that they may become fixed in their barrio and not move from place to place.



Hand and loom weaving.

Another difficulty is that the Negritos insist on their children marrying very young, and that generally takes them out of school before they have reached the stage of training desired.

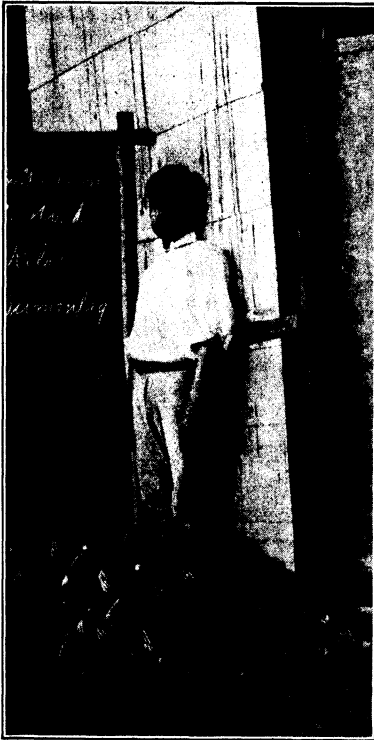
There have been, at times, outbreaks of dysentery when almost the entire population desert the barrio, take their children with them and go back into the mountains, leaving the school for a time almost without pupils. One cannot reason with these people. He must simply observe their customs, and have the patience of Job and a will that is absolutely proof against discouragement.

As long as education works from the top downwards, it can never become the dominating force in life—it must be in line with the human interests, which are nine-tenths practical. (Musselman.)

THE LUMBAYAO SETTLEMENT FARM SCHOOL.

By GEORGE C. KINDLEY, Supervising Teacher.

THIS settlement of Bukidnon and Manobo people is on the south bank of the Pulangi River, where it enters the grassy highland of Bukidnon from the timbered hills. By horse trail it is about four hours' travel east of the Mailag Agricultural School. So secluded is the settlement that it has only



The boy who grew 74 kilos of corn on 100 square meters of land.

one trail leading into it that can be traveled on horseback, and a part of the year this is not passable on account of flooded rivers. To the east, a dim foot trail winds around the foothills up the Pulangi River to the country known as Tigua, the country of the famous old dato, Mandicoonlay. Very few white people have ever entered this part of the country and those few went with guards.

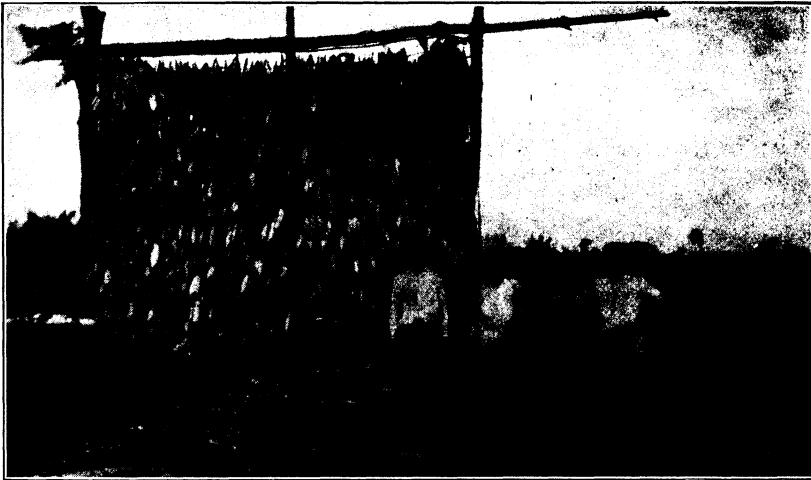
In 1910 the people of this Tigua country raided the Barton Ranch at Mailag and destroyed it. Many of the raiders were killed by the Constabulary. Previous to this, these people did little but rove about seeking their enemies on whom they wished to be revenged. Feuds were common and murders frequent. Lieutenant-Governor Fortich induced a small number of them to settle at Lumbayao. Since that time they have been

leading a very peaceful life, devoting less time to their ancient practices and more to agriculture.

In 1912 the settlers petitioned for a teacher and a school. Secretary Worcester and Lieutenant-Governor Fortich, acting on the request, recommended that the matter be investigated and, if advisable, the school be given them. I made a trip up there,

partly for the purpose of locating the school and partly in behalf of the Mailag Agricultural School, in the way of purchasing supplies. After looking the town over, I told the presidente that in my opinion there were not enough children there to justify us in sending them a teacher. He replied that on the following morning he would show me the children, and he did. Next day he lined up 26 children on the town plaza, some of whom had on clothing, and stated that there were many more, in the near-by "cañingins," that would attend.

On December 25, 1912, Mr. Santos Cudal, of Agno, Pangasinan, opened school in the municipal building, a small grass-covered bamboo house, with an attendance of 26—19 boys and 7 girls.



Corn put up for seed.

Mr. Cudal made a temporary transfer of school supplies from the Linabo school, including a chart, some garden implements, a Chinese bullock, and a Luzon plow. About the same time the lieutenant-governor sent up some other bullocks and one of the Bureau of Education disk plows, requesting that the teacher instruct the grown up people how to handle them. After the children had cleared some of the land of the underbrush and stumps, the teacher gave practical plowing lessons to all upon the school plot, and, as a result, within a very short time he had put into cultivation $1\frac{1}{2}$ hectares of fine agricultural land. The teacher did not tell these simple people at first that there is a difference in the work for the boys and for the girls, so that they all worked together, and during one visit which I made to the

school, I saw girls handling the grub ax with as much ease and as much effectiveness as the boys.

When the teacher opened the register for enrollment of the pupils, he met with another unthought of difficulty. No priest had ever been in this part of the country and the children had not been baptized. A few had been to Linabo and had been baptized and named there. As they had no names (some had one name and some admitted that they had none at all), Mr. Cudal set about to give them names of personages that he had known or read of. To-day the register runs something like this: Woodrow Wilson, James Scott, Henry H. Boyle, David McKay, Frederick W. Taylor, George C. Kindley, Rip Van Winkle, Manuel Quezon, William Howard Taft, John Maynard, Theodore Roosevelt, etc.

The people are at present building one of the best schoolhouses



A Bukidnon baseball team.

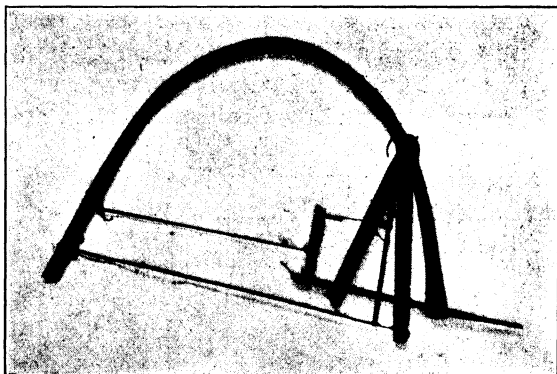
in the district of Malaybalay. It is 9 by 14 meters front, with an L for teachers' quarters. It is made of strong material and will, when completed, be a credit to most small towns. It stands on the school farm very near the town plaza.

On April 25, 1913, Mr. Cudal was succeeded by Mr. Simplicio S. Ipanag, of Bohol, who has managed the school very satisfactorily. His attendance rarely drops below 95 per cent and much of the time it is 100 per cent.

The bullock was taken back to Linabo, so the pupils have continued the cultivation of the farm, which is now more than 2 hectares, with hoes and bolos. In March some of the land was planted to camotes and other garden products, while 13,540 square meters were planted to rice and corn, mixed, as is the custom among these people. (Here I might say that I did not approve of this plan when I first came to Bukidnon and have experimented with the two crops the past year together and separate, in order to determine the better method. As a result I am persuaded to favor the mixed method. The mixed method has advantages which would not be so obvious where grasshoppers are less a pest than they are in Bukidnon.)

After the corn had been harvested from the field and the rice had begun to head, rats took to the field all about Lumbayao and entirely destroyed some small fields. One man planted 3 cavans and harvested only 6 gantas of palay. The teacher at this settlement had the children make 160 Bukidnon rat traps. (See picture.) These he set in the paths of the rats, along the fence. He reports having caught 441 rats and 9 birds within less than a month. From his $1\frac{1}{2}$ hectares he harvested 63 cavans of fine palay.

The school is now 10 months old. The first three months were devoted to preparation of the land. After the first land was planted some time elapsed before the harvest could be made. From June to October 31, 1913, garden and farm products to the value of ₱326.65 have been taken from the farm. This



Bukidnon rat trap.

included 63 cavans palay, 45 cavans corn, 10 cavans camotes, eggplant, cowpeas, mongos, radishes, and a few other vegetables.

The land where the palay was harvested is now all planted to cowpeas. The Bukidnon people are very fond of the cowpea when very tender and cooked like green beans. They are the most prolific crop in Bukidnon and the children at some schools carry home the green beans almost daily.

It is the rule among the settlement farm schools to distribute the products to the pupils of the schools from day to day as they may be harvested. This rule, however, has some variations. At this settlement the people are very poor, live far from the sea coast, and have very little of anything to sell. It is a very hard scramble for them to get clothing, so they decided to sell some of their corn for this purpose. I bought their corn from

them, in behalf of the Government, for food stuff in the Mailag Boarding School, allowing them ₱2.40 per cavan, shelled. In return I managed the purchase and delivery of the clothing, to protect them from the high-priced traders. I estimate that by so doing I saved them at least 50 per cent on their purchases. They sold enough to buy each boy cloth for two shirts, two trousers, and a red bandana handkerchief; each girl two calico dresses; with buttons, and a string of beads; each pupil also received one composition book and two lead pencils.

While this exchange of food stuff for clothing was a great favor to the children of the school and their parents, it was also a saving to the Government to get the corn for the boys at the boarding school. One cavan of the corn takes the place of one sack of rice as food at the school. This rice imported, by purchase through the Insular Purchasing Agent, cost about ₱14 to ₱15 per sack, including transportation on the backs of animals from Cagayan to Mailag, a distance of 150 kilometers. The corn costs ₱2.40, or about ₱2.50 delivered at the school, a saving of ₱11 to ₱12.50 per sack to the Government. If we have reasonable success with these settlement school farms we will never have to import any more breadstuff.

Three cavans of the palay have been stored away for future planting and the 60 cavans distributed to the 30 pupils who did the work.

Lumbayao won second prize at Mailag for the second best exhibit on Farm and Garden Day, October 18, 1913.

The Indian should be encouraged to build a better house; but the house must not be too different from his present dwelling, or he will, as a rule, neither build it nor live in it. The boy should be taught what will be of actual use to him among his fellows, and not what might be of use to a skilled mechanic in a big city, who can work only with first-class appliances; and the agency farmer should strive steadily to teach the young men out in the field how to better their stock and practically to increase the yield of their rough agriculture. The girl should be taught domestic science, not as it would be practiced in a first-class hotel or a wealthy private home, but as she must practice it in a hut with no conveniences, and with intervals of sheep-herding. If the boy and girl are not so taught, their after lives will normally be worthless both to themselves and to others. If they are so taught, they will normally themselves rise and will be the most effective of home missionaries for their tribe. (Theodore Roosevelt.)

THE MAILAG AGRICULTURAL SCHOOL.

By J. C. SCOTT, Division Superintendent of Schools.

A VISIT to Bukidnon by one who loves broad plains, cool invigorating atmosphere, and fields of waving grain is the most pleasant trip that can be made in the Philippines. Although pony and rider grow weary on the long 150 kilometer ride up the trail south from Cagayan, Misamis, each succeeding climb from the numerous cañons crossed brings more interesting views, a still richer soil, and increased wonder that from overcrowded nearby islands there has not come pioneers, with "Southward Ho!" their motto, to settle this fertile unoccupied country.

At the settlement of Impalutao, on the second day's ride, the great divide of Mindanao is crossed. Then, when past the prosperous settlements of Kalasungay and Malaybalay, the latter the subprovincial capital, a view is obtained of the Pulangi River Valley. Here it takes little imagination to picture, instead of waving cogon only, fields of grain, herds of cattle, farm houses, and church spires, for this broad level valley presents all that is ideal for agricultural prosperity. Here in this valley, on the best land in Bukidnon, 3 kilometers from the small settlement of Mailag, is located the Mailag Agricultural School.

The school was founded in 1908, the spot being chosen on account of the success of a small garden at the Mailag Settlement School, started the previous year. Insular aid was secured for erecting buildings, ₱5,000 being allotted from Act No. 1873 and, later, ₱3,000 from Act No. 1961. The work of construction was let by contract to the Barton Bros., these men furnishing materials from abandoned buildings on their unfortunate agricultural venture which had its headquarters near Mailag. Three buildings were begun, each of the same type, two stories, T-shaped, with a veranda in front and with a floor space in each story of 217 square meters. All materials used, excepting for harigues and framework, were light, owing to the difficulty encountered in transporting heavy timber from the mountains, none being found on the plains. Only one building was completed, although the allotments of funds were not entirely used. In June, 1913, work began for the completion of the remaining buildings, ₱2,000 additional being allotted from Act 2086. Two main buildings are now completed and in use—one for recita-

tions, teachers' quarters, shop, and machinery, the other for dormitory and storage of supplies.

The original purpose of the school was to educate boys of the Bukidnon tribe for teaching at the settlement schools on their



The dormitory.

return from school, the name "Malaybalay Normal School" being applied. It was soon found that boys of higher attainments than the second grade were not obtainable from settlement schools and that for considerable time the importation of teachers

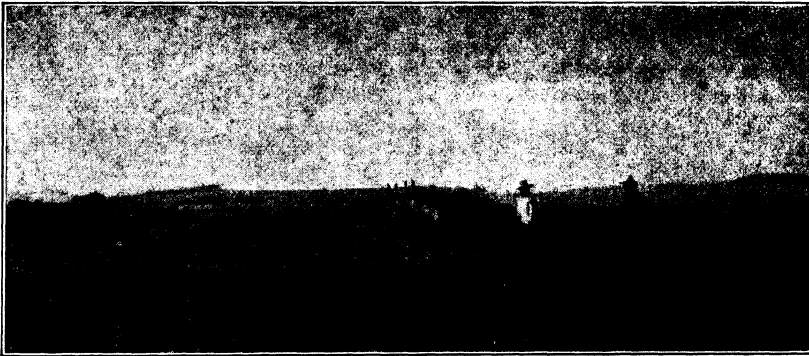


The schoolboys.

from Christian provinces, much farther advanced in academic instruction, would be necessary for continued advancement in school work. In 1910 woodworking and blacksmithing tools were furnished, the course changed, and the name changed to

"Mailag Industrial School." An attempt was then made to give Bukidnon boys an elementary knowledge of blacksmithing, wood-working, and farming. In March, 1912, a complete reorganization of the work was accomplished, farming only being assigned, and the name changed to "Mailag Agricultural School." From this date the school became much more successful, the farm work being profitable and popular with the Bukidnon people. It was fully demonstrated that the type of superior school in an agricultural community for boys who will return to their homes after completing their course, should be an agricultural school.

This is especially true in Bukidnon. Here the native inhabitants a few years ago were but slightly above absolute savagery, living a more or less nomadic life in the forests bordering the Bukidnon plains. Through the efforts of the provincial authorities, many were induced to settle on the plains, forming num-



Breaking rough land.

erous small settlements scattered over an extensive area. Other settlers came for protection, being driven from their clearings on the mountain sides by warring Manobos. Being accustomed to cutting and burning timber in preparation for their plantings of camotes and corn, these settlers made a poor living at their new homes. Had it not been for the numerous cañons filled with a scanty growth of timber, it is doubtful if they could have existed on the plains.

The aim of all schools in Bukidnon is, therefore, the very definite one of demonstrating the methods of making the prairie lands productive and giving the elementary instruction necessary for a higher state of civilization. Twenty-two settlement schools are operated, with a farm at each school of three or more hectares, cultivated entirely by school pupils. That these school farms very materially assist in furnishing the home food supply

is shown by the fact that during the period from June 1, 1913, to October 31, 1913, production reports show that more than ₱3,000 worth of farm products were taken to their homes by school pupils.

The Mailag Agricultural School is the central higher school, receiving such boys from the settlement schools as have completed the primary course of four years. It has always been the aim to enroll pupils from all parts of the subprovince, nearly every settlement at present being represented. This school represents the type of boarding school devoted to the development of an extensive farm. The school is in session the entire calendar year. Each pupil devotes four hours each day to actual farm work. The daily program is necessarily subject to change in rainy weather.

The farm of 48 hectares is fenced with 26-inch National woven wire and barbed wire strung on molave posts. This provides security from ravages by the wild hogs common on the Bukidnon plains. Six Chinese bullocks, plows and cultivators, and an assortment of hand tools comprise the equipment for farm work. A heavy disk gang plow is sometimes used but the light Luzon plow is more satisfactory.

The following table shows the area of fields planted at this school during the five months ending October 31, 1913, and the amount harvested, as recorded on carefully kept forms:

Crop.	Square meters.	Amount harvested.						Local value.
		June.	July.	Aug.	Sept.	Oct.	Total.	
Arrowroot	1, 702							
Bananas (bunches)	20, 128	93	106	137	94	146	576	₱115. 20
Beans (cavans)	6, 141		3. 5				3. 5	17. 50
Camotes (cavans)	8, 027	5. 5	7	4. 3	8	4	28. 8	43. 20
Cassava (cavans)	1, 120	1. 3	3. 2	1. 5		1. 5	7. 5	7. 50
Coffee	7, 776							
Corn, ear (cavans)	7, 790	40	. 5	1			41. 5	83. 00
Cowpeas (cavans)	924	1. 5		4		12. 8	18. 3	91. 50
Gabi (cavans)	10, 260		6	5	11	11. 3	33. 3	66. 60
Lemons (number)	60		122	74	99	113	408	4. 08
Melons (number)	40	12	7	17			36	3. 60
Peanuts (cavans)	18							
Pineapples (number)	60		29	26	2	7	64	2. 56
Radishes (number)	4			100			100	. 40
Rice (cavans)	53, 024					300	300	900. 00
Roselle (cavans)	468							
Tomatoes (cavans)	673				4	2	6	1. 20
Total	118, 218							1, 336. 34

From the above table it is shown that the farm produced ₱113 per hectare cultivated during a period of five months.

Since its organization as an agricultural school the aim has been to produce on the school farm all food for the dormitory mess. Subsistence reports show the substantial reduction in

the average cost of daily rations per student from ₱0.25 in 1911 to ₱0.04 for the month of September, 1913. With the present area under cultivation and with hogs and chickens for the meat supply, the importation of all principal food supplies will very soon be entirely discontinued and, in addition, a considerable amount of products will be available for sale, accomplishing the aim of making the school entirely self-supporting, except for salaries of teachers. Transportation of supplies by pack animals over the long trail from the coast is excessively high, amounting to ₱9 in charges for a sack of rice—more than doubling the original cost. This makes it imperative that the people



Boys cultivating arrowroot.

produce their own food near their homes and stop the importation of rice, salmon, and other supplies that can be replaced by home production. The boys are thus given the training to actually accomplish that which is most vital in the economic advancement of their tribe.

Thirty-nine boys are at present enrolled in the school, 40 being the maximum number authorized. These pupils, by grades, number as follows:

Grade III.....	5
Grade IV.....	19
Grade V.....	15

The purpose has been to eliminate the primary grades as soon as possible, making this school entirely intermediate, it being the only school provided for the Bukidnon graduates of the primary settlement schools. The Grade II class was recently discontinued and no further matriculation will be made in Grade III.

When the school was first founded it was difficult to obtain boys of any grade to leave their settlements to enroll in the school. All boys were then obtained only through much personal effort. At present many boys apply for admission who cannot enter, but most of these are of low grade. The chief difficulty in obtaining those in the higher grades is that, following the Bukidnon custom, all children are contracted in marriage by



Roselle.

their parents at a very early age. As considerable property is transferred to the parents of the girls at the marriage ceremonies, they object to postponement of the event.

Three Filipino teachers are in charge of the work at this school, one of whom is a matron, the wife of the principal, who is responsible for the dormitory and students' mess. The principal is under the supervision of the supervising teacher of Malaybalay. The work requires close application and only teachers greatly interested in farm work can succeed.

Not the least of the difficulties in the management of the school is the discipline of boys unaccustomed at their homes to observing rules of order and sanitation. New boys become homesick and older ones would rather go deer hunting or swimming than hoe corn. The boys are well fed and, without ex-

ception, gain in weight and strength on entering the school. No serious case of sickness has occurred at the school since its organization.

No visitor to the school can fail to note the orderly premises, the clean cultivation, the indications everywhere of thrift and industry and the cheerfulness and vivacity, whether at work or play, shown by the Bukidnon boys. A school of this kind in a farming community cannot fail to be of far reaching influence with the people or to prepare the boys for practical leadership.

Economists have classified the activities of the race into three main divisions, as follows: First, the house industries, or the period of domestic economy, which lasted from the earliest times until the beginning of towns in the tenth century; second, the period of town economy, or the period of handicrafts, extending from the tenth century to the beginning of modern times; third, the period of national economy, or the age of machinery and the factory, in which we now live. In passing through these activities many stages are represented. We note the hunting stage, the fishing stage, the pastoral stage, the agricultural stage, the stage of metals, the stage of trade, travel, and transportation, the city state, the feudal system, the handicraft system, and the factory system.

It is believed that the child in the course of its development passes through practically all of the stages that the race has passed through, and manual training in the home and in the school helps to supply the needs of the child in passing through the different stages of his development. Manual training not only helps the child to appreciate the activities of life of to-day, but it also shows the relation between the activities of the past and the present. Manual training deals with life, and is one of the serious considerations in the history of child development. (Joseph C. Park.)

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WANTED.—Wanted, men and women with a genius for work. It is well that they should have talent, it is well that they should have training, it is well that they should have good character, but if they do not know how to work, and have not an abiding zeal for work, their talent, training, and character will count for little towards that subduing of the earth which God had in view when he gave the world to man as the scene of his present activities. (Advance.)

THE INDANG FARM SCHOOL.

By JOSEPH A. COCANNOUER, Principal.

THE intermediate course at Indang was established in 1905, but, owing to the time necessary to construct the building, no class work was carried on till 1906. The school was originally intended as an agricultural school, and in November, 1906, the Director of Education issued a special order declaring it to be an integral part of the provincial school. Considerable equipment was sent out for the purpose of carrying on the agricultural work. Mules were introduced as work animals, but, owing to the peculiar habits of these animals, the Filipinos could not be induced to work them. A few crops were



The academic building.

planted according to American ideas, which, naturally, did not produce flattering results. It seems that those in charge of the school at that time became discouraged, so the agricultural work gave way to the academic course. Practically nothing more was done in the line of agriculture till Mr. Henry Wise came to the school as principal in 1908.

Mr. Wise was in charge of the school for three years, and, though laboring under difficulties, did some very excellent work. A part of the farm was cleared up and some of the land made ready for cultivation. There was no regular agricultural course in operation. What farm work was done was carried on in connection with the regular academic course.

When the present incumbent took charge of the school in June, 1911, the general course was discontinued and the farming course substituted for the boys and the housekeeping and household arts course for the girls. The school became predominately industrial rather than academic. There was considerable dissatisfaction on the part of both parents and pupils when the changes were made, but there is at present perfect harmony, and it is believed that the objection would be even greater were an effort made to change back to the original course.

The Indang Farm School is located in a barrio of the municipality of Indang, Cavite Province, and is about 25 kilometers from Naic, the coast town and terminal point of the railroad. The road from Naic to Indang is extremely poor; during the rainy season it is almost impassable even on horseback. During the dryer months carabao carts make regular weekly trips between the two towns, which is the only method of carrying the upland products to the coast.

Indang is about 300 meters above sea level. The soil of the entire surrounding country is principally volcanic ash, owing to the proximity to Taal volcano. It is especially rich in potassium, which accounts principally for the excellent quality of abaca produced in the Cavite highlands. The leading crops grown in the locality are abaca, coconuts, upland rice, and corn.

The Indang Farm School is fed from the towns of Indang, Silang, and Alfonso. The school draws very few pupils from the lowlands. The people are energetic and thrifty in a way, yet they are several years behind the coast people in most respects.

Since the farming course was started, the aim has been to make the farm a real help to the farmers in the locality. This has not always been an easy matter, owing to the general mistrust in which the native farmers hold all foreigners. With persistent efforts and a superamount of patience, it has been possible to see some good results even at this date. The work on the farm has been made very practical, with just a sufficient amount



General view of coordinated home project No. 4.

of scientific agriculture intermixed to let the boy know what he is doing and why he does it. The aim is always to better the native methods of farming rather than to introduce new methods.

The work of the school is carried on according to the following plan: The fifth-grade, or first-year, boys have their work divided into three distinct divisions—work with native vegetables, work with foreign vegetables known to do well in the tropics, and general cleaning and repair work of the farm. Not only are the boys taught how to grow their plants properly, but also their knowledge of vegetable gardening is judged very largely by what they produce. It has been found that best results are obtained when at least half of the work is carried on by the boys individually rather than by the class in common. Work with native vegetables is handled by the class as a whole, but each boy



A schoolboy plowing.

has his individual garden in which he grows the foreign plants which especially suit his tastes.

The sixth-grade, or second-year, boys devote most of their time to field crops, though each boy possesses his individual garden where he makes a special study of foreign vegetables. The foreign vegetable work is carried on more extensively than it is in the fifth grade. The farm crops consist of upland rice, corn, legumes and other cover crops, and various plants belonging to the sorghum family. Several varieties of rice are worked with, and their characteristics and values carefully studied. Corn is very thoroughly studied from every standpoint. Many field experiments are carried out for the purpose of showing concretely just what methods to use to produce the very best results.

In the second-year class the study of hogs and poultry is taken up. Two good breeds of chickens are being worked on at the school, though the ultimate aim will be to eliminate all but one strong breed. The Chinese poultry seem to be more suited to the Philippines than any other variety. They are easily corraled, are strong layers, and rank especially high as a food chicken.

In the seventh grade, or last year, the work is both scientific and practical. A real effort is made to work out the real causes for all the different results which were noted the other two years. The outside demonstrations consist of work on various field crops, vegetables difficult to grow, forage crops, and various orchard crops.

Perhaps the most important work of the last year is the co-



A field of beans.

operation work with farmers. Each boy is in direct charge of a farm where he instructs the farmer in the various practical lines pertaining to agriculture. The farmer supplies the land and work animals and does most of the work, though the boy in charge is required to lend much assistance in the field. All seeds are supplied from the school farm. The coöperation work is classed under two heads—garden crops and farm crops. In the farmer's garden are grown five or six garden vegetables which he desires. The farmer is allowed to choose his garden plants under certain restrictions. The farm crops consist of two varieties of corn, cow peas, peanuts, and two or three varieties of the sorghum family. Those who are in charge of the coöperation work are greatly encouraged at the interest which the farmers in general take in the work. In fact, more farmers

have asked to be placed on the list than the school has been able to handle.

At the Indang Farm School certain crops have been given more attention than others, owing to their very special value. Among these more important are sweet potatoes and legumes. Sweet potatoes have been collected from various parts of the Orient and the United States, till it is probable that the school possesses the best collection of these valuable roots now in the Philippines. Cuttings have been scattered throughout the neighborhood and the growing of certain varieties is becoming quite popular among the natives.

For some time the school has been striving to find a bean which would grow and develop similar to some of the pole beans so



Hemp.

popular in Europe and America. This has at last been accomplished. The bean is hardy and prolific, and it is believed that it will prove to be a great addition to the farmer's small store of vegetables.

One other very important experiment which is now under way at the farm is that of growing good-sized onions from seed. Though this experiment is still incomplete, it has been carried sufficiently far to almost guarantee its success.

Corn has received special consideration on the farm, and several varieties have been carefully experimented with. The experimental stage of corn growing at the farm, however, is practically over, and two or three leading varieties have been permanently chosen. Rice has been handled in the same way

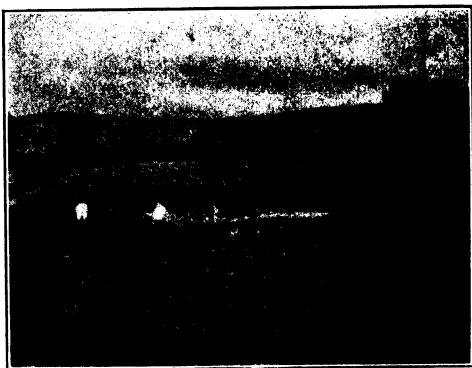
as corn, and five varieties have been finally chosen as being worthy of holding a position as permanent crops on the farm.

In general, an effort has been made to secure and grow on the farm all plants which might be distributed among the farmers, with the aim of bettering their food condition. Many plants which are especially valued by the Caucasians have been discarded, owing to there being other native species more suited to the Filipino taste.

Besides the principal, who has general charge of all work, there is one man at the farm who handles most of the class work in agriculture and who has direct supervision of all class and field experiments. Another man has direct charge of garden and repair work and handles all records of the school pertaining to agriculture. A very complete record is kept for every variety of plant grown on the farm. The card system is used, a separate card being kept for each plant. By means of these records one is able to see at any time just what cultural work is being done at the school. The coöperation work, special class work, and special field experiments are handled exclusively by the principal.

A good per cent of the principal's time is spent in visiting and instructing the farmers who have charge of the coöperation farms.

Up to the present time very little effort has been made to sell the products from the school farm. Most garden products go into the homes of the boys, while the grains which are not used on the farm are distributed among the farmers for seed. When the school becomes older and well established, a certain per cent of the produce from the farm should be sold and the proceeds revert to the school fund or to the province. It is believed that the real aim of the farm school should be not only to train the boys in practical lines of agriculture, but also to create a desire for better things by having the people see and try them in their homes. When this end has been well accomplished, the school may then be made, to a certain extent, a revenue-producing



General view of coöordinated home project No. 10.

institution. However, an agricultural school should never be considered a revenue producer to any great degree.

No one who has done any real work in the agricultural line in the tropics will gainsay that the difficulties met with on every side are almost beyond number. It is practically safe to say that every plant possesses its insect and fungus enemies. There are a very large number for some plants. Then there is the uncertainty of seasons, and a general disinterest and mistrust on the part of people which at times tax the patience of those in charge of the work very severely. On top of all this there is the continual danger from straying animals, thieves, and storms. Most all of these difficulties have been met with at the Indang Farm School in a greater or less degree.



Coördinated home project No. 5.

But though the school has seemingly encountered more than its share of difficulties, it has also met with some real success. The people in the community are beginning to see that it is possible after all to learn something about agriculture in the school, and the enmity which formerly existed toward the school has about disappeared. The boys have settled down to the new course, and it is easy to see that the general health of the pupils has been very materially improved through wholesome outdoor exercise. The school has been the means of introducing new plants into the neighborhood, and the favor with which these have been received has made the interest in the school much keener. The school is becoming a distributing center of plants and seeds for the surrounding country.

The Indang Farm School will graduate its first class which

has completed the full course in March, 1914. Though there have as yet been no real graduates from the school, some boys are doing some creditable work along agricultural lines. The agricultural inspector for the Bureau of Agriculture in the uplands of Cavite Province was a student at the Indang Farm School, and he is making good. Another student of the school has just been appointed to a similar position. Some of the former students are attending the College of Agriculture at Los Baños, but the large majority is engaged in teaching or attending school in Manila. As may be expected, some are doing nothing. A few boys are trying to apply practically on the farm some of the things they learned while in the school.

As before stated, the Indang Farm School is now in its third year. Much has been done in a material way to train the boys how to farm properly, though much more remains to be done. All those connected with the school have worked with the determination to make it a success. The Filipino teachers in the school deserve very high commendation for the loyal support and unwavering interest which they have always shown in every project. Without their very valuable help little could have been accomplished.

It may be well to note in closing that the side issues of the school have been in no way neglected. The athletics are well organized and a part of every day is devoted to sports. Every boy in the school is required to take athletic training, and one may see, between the hours of 4 and 5, every day when the weather permits, baseball, volley ball, basket ball, tennis, two games of indoor baseball, and track work all running at the same time. The lesson taught in the old adage, "all work and no play makes Jack a dull boy," is thoroughly lived up to.

The housekeeping and household arts course, which is given in connection with the farming course, is well managed by the young women in charge, and every effort is made to train the girls in the art of home making. They are especially taught to cook and to use the products grown on the farm.

Wise work is useful. No man minds or ought to mind its being hard if only it comes to something; but when it is hard and comes to nothing; when all our bees' business turns to spiders; and for honeycomb we have only resultant cobweb, blown away by the next breeze—that is the cruel thing for the worker. (Ruskin: Work.)

THE CENTRAL LUZON AGRICULTURAL SCHOOL.

By KILMER O. MOE, Superintendent.

HISTORICAL SKETCH.

EXECUTIVE Order No. 10, under date of April 10, 1907, set aside a tract of agricultural land from the public domain for the purpose of establishing an agricultural school. This project was fathered by Mr. T. W. Thompson (now deceased), division superintendent for Nueva Ecija, who clearly foresaw that the rich, unoccupied agricultural lands on the great plains of central Luzon were destined to be taken up and settled at an early date. He urged on every occasion the advisability of reserving a portion of these lands for the purpose of agricultural instruction and succeeded in interesting the provincial board of Nueva Ecija to the extent that the funds were voted to make a preliminary investigation.

A tract of land situated in the vicinity of Muñoz, at that time a barrio of San Juan de Guimba, was finally decided upon. This tract contained open grasslands and forest, was intersected by the main road to San José, and was seemingly well watered, being crossed by no less than three streams. With the assistance of Mr. Percy A. Hill, a former Constabulary officer who had cast his lot with this fast-developing section of central Luzon, the necessary data was obtained and presented to the proper authorities. Mr. Hill later made the preliminary survey and located all the corners of the tract.

In the meantime the Director of Education, Dr. David P. Barrows, had become interested in the project. After personal investigations both by Dr. Barrows and by Dr. Edwin B. Cope-land, dean of the College of Agriculture, it was decided to present definite recommendations to the Governor-General looking toward the reservation of the tract. As has been seen, this was acted upon favorably and the project took definite form.

Before this, however, Mr. Thompson had transferred to another division and Mr. C. D. Whipple, who took his place, became official sponsor for the school. It was soon discovered that the project presented a great many more difficulties than was at first anticipated. The country was wild. Transportation of supplies had to be made over 33 kilometers of carretón trails which for several months in the year were nothing more than

a continuous succession of swamps and mud holes. At times during the rainy season, they were impassable except on horseback and then only at great risk on account of swollen streams. There were no houses within miles of the place, no land cleared, and nothing but jungle alternating with stretches of open grasslands. The funds available for the project were a mere bagatelle.

The early pioneers in America had at least the advantage of having the work accomplished by strong, able-bodied men. Here was pioneer work, also, but with immature schoolboys to do it. The problem was further complicated by the fact that all hardships were assumed voluntarily by the students, and when a number of them got discouraged and left, there was nothing stronger than moral suasion to hold them.

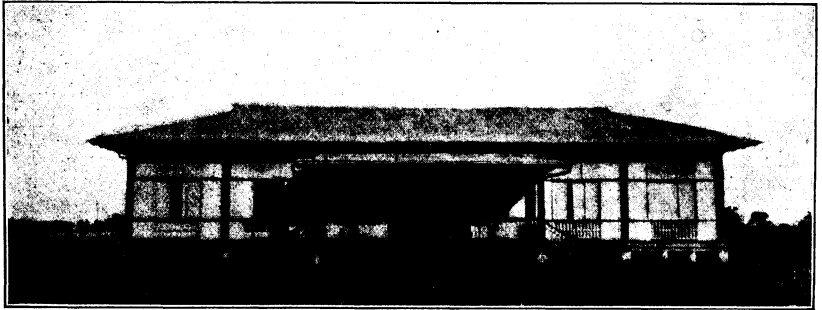
Under conditions such as these, the Central Luzon Agricultural School came into existence. A superintendent was assigned and tentative plans were laid. Before taking charge Mr. George Whiting, the first superintendent, made a visit to the United States and Mr. Durham, now of the College of Agriculture, took over the work in his absence. During this period practically no school work was attempted, but efforts were made to construct buildings that would satisfactorily house the pupils. Upon the return of Mr. Whiting immediate steps were taken to organize the school. About 50 boys were enrolled and a principal was assigned.

Three buildings of light materials had previously been constructed—one dormitory, one schoolhouse, and one building in which to prepare and serve meals. Arrangements had been made with the Bureau of Agriculture whereby a traction engine and a disk plow, 14 work animals, and an assortment of farm implements were taken over by the school. A sawmill was purchased by the Bureau of Education and installed near the building site. It really began to look as though the project was well on its way to an assured success.

But difficulties soon began to put in their appearance. On October 23 and 24, 1909, scarcely a month after the opening of classes, a terrific storm broke loose and carried away the lightly constructed buildings leaving the school practically without shelter. It is said that pieces of mosquito nets and articles of apparel belonging to the pupils were afterwards found clinging to trees 7 miles away. Immediate steps were taken to provide temporary shelter by erecting grass shacks, but the arrangement was anything but satisfactory. Fever and dysen-

tery broke out among the students and general dissatisfaction became the order of the day. The engine proved to be worn out and practically unfit either for sawing or plowing. It was not long before the majority of students grew so dissatisfied that they took French leave at first opportunity.

Obstacles continued to pile up faster and faster. It was soon evident that the responsibilities connected with an institution of this kind 20 miles away from any source of supplies and situated in a sparsely settled district, were considerably greater than had been anticipated. Other pupils were brought in to replace those who had left, only to get discouraged and leave after a few weeks. Disheartened by the number of unsuccessful attempts to build up a student body and weakened by exposure, the superintendent found himself in ill health in addition to his other troubles. He continued to grapple with the situa-



The mess hall.

tion until April of the following year, when he was relieved by Allen A. Helms of Cuyapo, Nueva Ecija.

By this time the expectation as to what actually could be accomplished had been greatly modified. The fact began to impress the school authorities with more and more force that this was a new and untried experiment, carried on under conditions which were not at all as favorable as had been represented. There were not lacking those who believed that a further expenditure would prove a useless waste of time and money. While these experiences served to show the magnitude of the undertaking, they also helped to eliminate much of what was impractical and visionary. A better grasp of essentials and a clearer vision prevailed from now on. It was decided to continue the efforts with renewed energy. A new traction engine was ordered to replace the old one and steps were taken to organize the institution on a better basis. About this time

both the Bureau of Agriculture and the provincial government of Nueva Ecija dropped out leaving the Bureau of Education in complete control.

Mr. Helms brought with him a selected number of boys from the town of Cuyapo, who stood by him loyally through all sorts of trials. This group formed a nucleus which held out against all odds. Other boys came and went, hard work and poor accommodations had to be endured, but this nucleus staid and supported the superintendent in every crisis. The grit and loyalty of these boys saved the day. Worthless and undesirable boys, being unable to stand up under the strain of hard work, soon dropped out and an industrious student body was built up through the natural process of elimination. The attendance

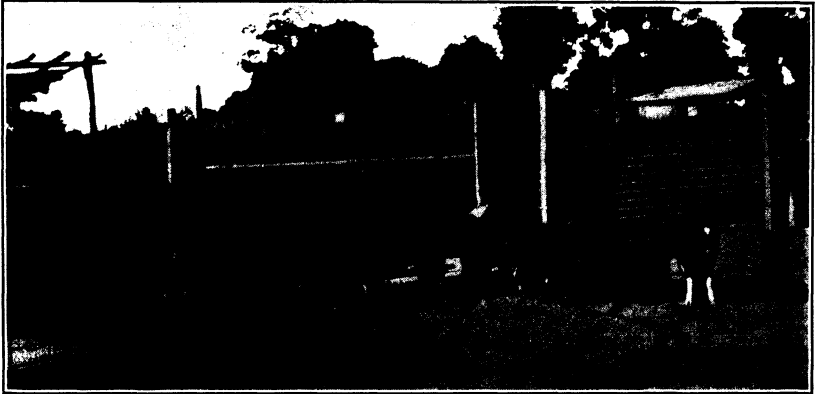


Ideal conditions for pineapples.

rose from 29 in April, 1910, to 84 in June of the same year. In December it was 127 and it has been going up steadily ever since until at present a great many more applications are received than can be approved for lack of accommodations. The present attendance is approximately 180. Separations from the school at present are due to ill health, inability to do the farm work, mental incapacity, and undesirability.

It must not be imagined that the struggle was over when Mr. Helms took charge. Lack of definite and approved plans, drought, poor accommodations, governmental red tape, destructive fires, and lack of transportation facilities, all combined to hamper progress. But through it all a steady growth was maintained. New fields were put under cultivation, provisional

dormitories and other buildings were erected, and a school was maintained. When the writer took charge in June, 1913, the institution was on its feet, with a larger student body than could properly be accommodated. A goodly portion of the farm was under cultivation, and the accounting and administrative



Mestizo hogs segregated for observation.

features were well defined. In fact, the early struggles were over and the institution had taken its place among the insular schools of these islands as one of great promise.

These historical facts have been recorded at some length because of the criticism to which the Bureau of Education has



Work cattle at shed.

been subjected for not establishing a larger number of these schools. The difficulties which faced the Bureau in the establishment of the Central Luzon Agricultural School would have been just as pronounced elsewhere. The lessons which have been learned will prove of inestimable value in the future

program of the Bureau. The wisdom of bringing one school beyond the experimental stage before expending large sums of money in opening others will be appreciated.

AREA, LOCATION, AND SUITABILITY OF THE RESERVATION.

By actual survey the reservation was found to contain 657.85 hectares (approximately 1,700 acres). It is in the form of a parallelogram, the longer axis of which lies almost due east and west. The distance out from the nearest railway station is 33 kilometers, 21 of which are over a first-class road. The remaining 12 kilometers have been surveyed with a view of extending the first-class road to the school and beyond.

Adverse criticisms have been heard on various occasions because of locating an institution of this kind in such an inaccessible place. In this connection it should be noted that it is not an easy matter to secure a block of suitable land of sufficient area to meet the purpose for which this school was organized. Furthermore, at the time of organization it was hoped that Muñoz would be made the provincial capital of Nueva Ecija. The railroad, which had just been completed to Cabanatuan, was expected to extend on farther past Muñoz and San José and eventually, through a gap in the mountains, to the Cagayan Valley. The provincial authorities of Nueva Ecija even went so far as to select a provincial site in the vicinity of the agricultural school site. All of these expectations have since failed to materialize.

The land itself is typical of a large area of Luzon and is suitable for a variety of crops. It is mainly a rich brown sandy loam with outcroppings here and there of sand and gravel. Large sections of the farm are underlaid with gravel, which fact there bears out the theory that a greater portion of the land constitutes ancient alluvial deposits of streams which later changed their courses. The top layer is rich, fertile loam but, being underlaid with sand and gravel, loses its moisture very easily in dry weather. This is an advantage in the rainy season, however, as the drainage is greatly improved. A smaller portion of the farm has a clay subsoil of sufficient density to hold



A surface well.

the water and insure a good crop of lowland rice in ordinary seasons.

The entire farm, as far as tests show, is underlaid with a water strata which is reached at a depth of from 8 to 20 feet. Wells 16 feet deep furnish a constant supply of good, clear water suitable for domestic use. A test made with the engine and pump during the dry season demonstrated that a flow of 40 gallons per minute did not lower the level of the water in a 4-foot well an inch in twelve hours of steady pumping.

This fact may prove of great consequence in the future development of this farm and of the surrounding country as well. There is water in abundance in most places at a depth of less than 20 feet. As soon as the mechanical difficulties of raising it above the surface where it can be utilized for irrigation have been overcome, a very serious problem will have been solved.

The problem of securing water in sufficient quantities to mature a rice crop in all seasons is indeed a serious one. There is plenty of water in the natural streams, but the porous condition of the soil makes it a very difficult matter to utilize it to advantage on account of the enormous loss through seepage. The question of irrigation has been and is the most serious and complicated problem confronting not only the Central Luzon Agricultural School, but a large section of this fertile plain.

A PROBLEM OF FIRST IMPORTANCE.

The public school is receiving more attention to-day than ever before. Grave doubts are entertained by educators the world over as to whether the curriculum in vogue really provides the proper training to fit the individual for the struggle of later years. The fact is being brought home in a thousand different ways that an education which is not a preparation for a useful life is an unwarranted expense against the funds of the State. The most promising products of our schools too often turn out to be mere hothouse blossoms which, having been reared under artificial conditions, have come to luxuriant growth, but which easily wilt when removed from the artificial influences and forced to struggle for existence in a world of stern reality. In other words, there is a real education which makes a school education worth while; a preparation which every one must have but which many neglect to get. The problem of how to link school life with home life and with the real difficulties which will confront the individual after he leaves school is one which holds first place in the best educational thought of to-day.

Educators of note from the United States and elsewhere have expressed themselves to the effect that perhaps the greatest benefit derived from our sojourn in these Islands is to be found in the practical system of industrial instruction which has been established—results which throw additional light on the problems now confronting educators of other lands. The Bureau of Education has made great strides toward a satisfactory solution of this problem, largely because the work here has been organized and carried on without any regard for old tradition and precedent which, in other countries, serve merely to hamper progress.

That phase of our industrial instruction which aims to give practical lessons in agriculture easily ranks first in importance, for the reason that agriculture, in one form or other, may be said to be the only industry of any importance in the Philippines. Now, nothing is easier than to demand that agricultural instruction of a sort be given that will offer to the youth of the land an opportunity to become industrial leaders or to fit them to pursue agriculture with profit both to themselves and to the community in which they live. But to accomplish practical and effective results in conformity with this demand is not so simple as it may seem. True, academic training may easily be given but this, though ever so thorough, has but a slight bearing on the desired result. What is wanted is a human product which will be a real economic factor. Anything short of this is but rearing hothouse plants under artificial conditions.

PARTICIPATION IN REAL PROBLEMS.

No class of school can possibly offer so great an opportunity to participate in problems of every day life as the type to which this school belongs. Here we learn by doing. We actually grow the field and garden crops, construct buildings, roads, irrigation and drainage systems, and conduct our affairs in a manner which approximates very closely the conditions which the boys are most likely to meet with when they leave school to take up the duties of real citizenship.

Shortly after the writer arrived on the scene, he was waited on by a group of boys who demanded to be given transfers in order that they might return to their respective towns. The common complaint was that they could not "suffer the work." Most of these boys were strapping big fellows, and two or three had creditable records in athletics. But they had never had any tasks to perform which required continuous effort. We were in the midst of the rice-planting season and whatever of novelty the sit-

uation afforded soon wore off as hour after hour they were obliged to stand knee-deep in mud and set out rice plants. Here was a situation. Nothing whatever was the matter with any of



Schoolboys harvesting upland rice.

these boys except a lack of perseverance. Their request was flatly refused and though it took considerable persuasion, they were finally induced to go back to work, but not, however, until one or two had been placed under guard. All of these boys staid and acquired the habit of industry. From that time on they



The old threshing floor. A modern thresher is now used.

caused no further trouble. Some of them have since filled places of considerable responsibility in the internal organization of the school.

Not all who gain admittance turn out so well. One rather typical case presented itself when a boy, who evidently had heard of the requirements beforehand, asked to be admitted. He promised well, stating that he was familiar with all kinds of farm work and would work seven years, if necessary. His credentials being good, it was decided to admit him on probation. After two or three days he had had enough. His palms were blistered, his back ached, and his spirit was broken. He was a sorry boy the morning he came up begging to be let off. His seven years had dwindled down to three days. Now, there are no provisions at the Central Luzon Agricultural School whereby a boy in good health can be let off from his daily tasks. He must earn his keep or he does not draw any rations. As this boy was on probation he was given five minutes either to go back to work or depart. He chose the latter and has not been heard of since.

Another rather ingenious chap, with a brain a good deal more fertile than appearances would indicate, hatched out a scheme of his own to get away with his record unimpaired. Early one morning he presented himself at the office in full mourning. The crape on his arm was very conspicuous and he had not even forgotten to put some on his hat. He told a most pitiful story of how his father had just died and that he was the only support left for two minor children of tender age. His story seemed plausible enough but the action was a little overdone. He was permitted to leave at once but was told that his transfer would be mailed to him as soon as his story could be verified. A letter was at once dispatched to the principal teacher of his town asking for the necessary information. Two days later Cirilo was back. He had not gone to his home town but had spent the time in the near-by town of San José trying to figure his way out of a serious dilemma. His story was a pure fabrication and he was caught. He decided that the best thing he could do was to confess his fault and beg for mercy. Later a letter was received from the



Winnowing rice.

principal which cleared up the matter completely. The boy was not readmitted.

It may be inquired as to why efforts were not made to detain these boys and save them if possible. In answer it should be stated that this is in no sense an asylum for weaklings. The accommodations are too limited even to house a better class of boys. It is generally found to be the part of wisdom to let a boy go as soon as he proves himself unfit in order that his place may be taken by others of better stamina. Since June more than a score of boys have been let out because of inability to stand up to the work assigned them.

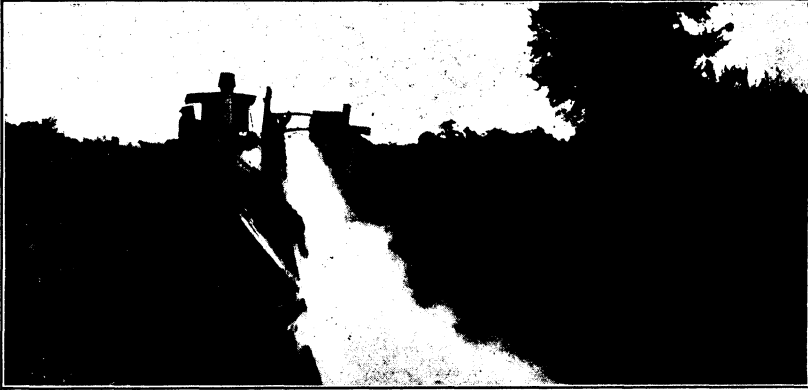
A boy, upon being admitted, is immediately brought face to face with the stern laws of political economy. Plenty of good food is prepared daily, but he must earn his right to share it. This is a community where vagrancy is a crime, and where every able-bodied member must do his part. Advantages and comforts multiply as time passes, and as more improvements are made. No student at present needs suffer for the want of anything. But each is provided with definite tasks and from these there is no escape.

Discipline of this sort is a boy's greatest opportunity. We aim to give each a chance to work with both head and hands. He gets plenty of opposition, something to endure, something to strive for, and something to prize. We do this in the hope that he will come out broader in mind, harder of muscle, and better equipped to face the duties and responsibilities of later years.

AT WORK AND AT PLAY.

The casual visitor, no doubt, will have his attention first called to the noises which emanate from the shop and machinery building. Here a 22-horsepower traction engine tugs away at the various machines with which our little community is provided. To-day a detail of boys may be busy hulling rice for use in the student mess. At the same time another detail is planing boards at the planer, to be used for making furniture or a floor, and a third set may be doing the bench work necessary to make school and office equipment. Near by is the blacksmith shop, where the flaming forge and ringing anvil proclaim the story of how red-hot iron is shaped into all sorts of articles useful to man. Here all the farm repair work is done; plows are sharpened, saws set and filed, parts welded together or made new, bolts made and threaded, and plumbing fixtures attended to.

On days when the sawmill is used, the other machines are silent, as it takes all the available power to saw out lumber from the hard native timber. At other times the traction engine is used out on the farm to draw in logs or to pull the large disk



A 10-inch centrifugal pump in action.

plow. It also furnishes power for the centrifugal pump which is used in the dry season to irrigate the field and garden.

The machinery department is in charge of an American engineer. His duties are entirely supervisory, the work itself being done by students. A permanent detail of six boys, three in the morning and three in the afternoon, do all work connected with the traction engine. These boys are taking a practical course in steam engineering, with a view to supplying the

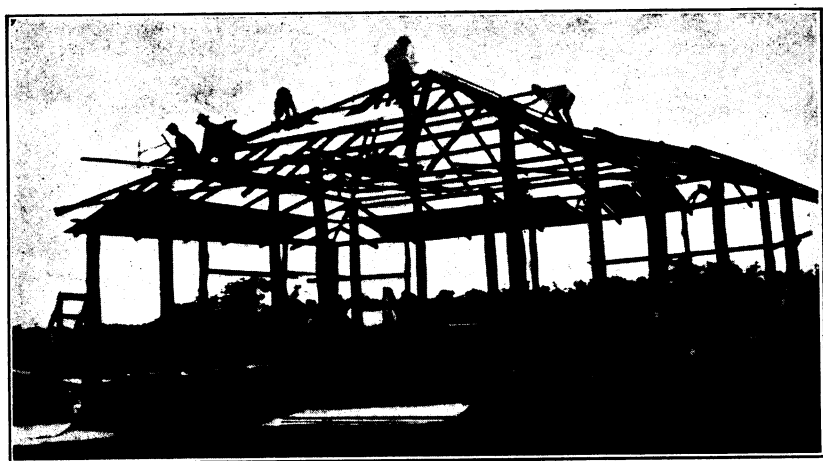


A practical lesson in field irrigation.

demand for men qualified to do this class of work. The rest of the boys on these details are changed every two days, in order to give experience to a larger number. The ironworking is in charge of a capable Filipino blacksmith who occupies the position

of craftsman. The boys who serve under him are apprentices. We now come to the kitchen and bakery, where the food necessary to satisfy 180 boys is prepared. This department is also supervised by an American teacher, but the work itself is in the hands of the boys. Two mess corporals, one in the morning and one in the afternoon, have the responsibility of preparing and serving meals, and a competent baker, also a student, bakes the bread and does the pastry cooking. Our bakery is acquiring considerable local fame. We furnish bread to all the Americans in the vicinity.

It takes eight boys besides the corporals and baker to properly prepare and serve the meals; four on the morning detail and four in the afternoon. Boys on this detail have acquired the



Schoolboys framing a bungalow.

local name of "cook's police." From the nature of the service, this detail is heartily disliked by most of the students.

The farm operations are under the direct supervision of the superintendent and a Filipino farm assistant. The duties of this department are so numerous that it would only tire the reader to enumerate them all. They include all the work necessary to plant, cultivate, and harvest field, garden, and orchard crops; clear land; build dikes, dams, and ditches; build fences; and care for work animals, hogs, and poultry; in addition, to look after the construction and repair of buildings, roads, bridges, and culverts, and to assume the responsibility for the maintenance of sanitary conditions on the premises. In all this a general supervision only is maintained by American and Filipino teachers. The direct supervision is in the hands of

"class captains" (students in charge of details and entrusted with the responsibility of getting definite results with them). The method of securing these results will presently be seen.

In this community a school is maintained as an important and necessary feature only. While a certain amount of academic



Schoolboys plowing.

training is essential, the classes are so conducted as to give little of the dry atmosphere of the ordinary schoolroom. Oftentimes whole classes recite in the field or in the garden and nursery, as these places offer better opportunities for imparting lessons of real value. The data used in the classroom are largely taken



Studying the effects of drought on growing corn.

from the problems and experiences which come up in the daily life of the students.

A systematic correlation of farm life with classroom subjects is believed to afford the best means for the proper development of boys who are getting agricultural training. Questions of vital

importance may be taken up, studied, and discussed in the classroom, a thing which is impossible with work details out on the farm. Similarly, the knowledge and experience gained by the actual doing of the work is of the highest importance, as without it much of the classroom instruction would prove meaningless. In this way the one field of effort supplements the other in a manner to serve the best purposes of both.

While a good school is maintained, we cannot lay claim to any degree of superiority on academic grounds. Many schools throughout the Philippines give courses of instruction which include a wider range of subjects. None, however, excel us in the opportunities given to share the duties and responsibilities of actual life and to train for work which is common to every community.



Studying forest seedlings in the nursery.

A four-year course is offered. The first three comprises the intermediate course in farming as prescribed by the Director of Education; the fourth year to date has followed very closely the work outlined for the first year of high school. This is being replaced by courses which aim to prepare for definite service. The demand for men trained to do things, even though such training is elementary, is so great that a school of this kind is not justified in merely preparing pupils to continue their studies in higher institutions. As soon as possible, definite courses will be prescribed for farm assistants, agricultural and garden teachers, practical farmers, and steam engineers, special emphasis being placed on the physical problems connected with each vocation.

It must not be supposed that life at the Central Luzon Agri-

cultural School is all work. I believe we are safe in claiming the best athletic field in the province and this comes in for its share of daily attention. We have facilities for baseball, basket ball, volley ball, and tennis, together with a quarter-mile track. All the athletic equipment required for a provincial field meet has been provided.

Besides athletics we have literary societies which meet every week, field and forest excursions are organized, and off and on a social dance takes place at the mess hall. On these occasions the boys play hosts and invite their friends from the neighboring towns, not forgetting the girls. We are making efforts now to organize and equip a school band, which will add still more to the life of the school.

METHOD OF MANAGEMENT.

Promptly at 6.30 every morning the bugler sounds the call for assembly. The entire student body is then lined up in front of the administration building for roll call, and to receive the instructions, and hear the announcements for the day. The observer will naturally be interested to know what these boys will do and how each will receive due credit for what he accomplishes.

This is a semimilitary organization. From reveille at 5.30 a. m. to taps at 10.15 p. m. each member is accounted for either on some work detail, in the classroom, or in one of the dormitories. Half of the pupils attend school while the other half works and, consequently, it is necessary to have a double organization in order that the manual work may continue throughout the whole day.

Ten captains have direct charge of the work details each day. Five of these work in the morning and the other five in the afternoon. These captains serve for a period of two consecutive weeks, when they are replaced with others from the same grade. This is done so as to give every boy in the grade a chance to demonstrate what he can do and to give practical training to a number of boys in the art of handling men. Only boys from the seventh and eighth grades are chosen to fill these places. The lower grades need more experience as workmen before they can properly be placed in charge of details.

The boys, upon being assigned, report to their captains and together they proceed to the tool house where the tool keeper, with the aid of the captains, checks and issues the necessary tools and implements for each detail. The tool keeper has the

rank of captain and serves also for a period of two weeks. To care and account for property is such good, practical training that the opportunity is given to as large a number as possible.

The reader's attention is called to the page from the class captain's report book. This is the manner in which he makes the daily entries of the boys who work on his detail, indicating the hours they work, how much they do, and the quality of work performed. Upon being approved by the teacher in charge, the rating which he gives becomes a permanent record and is transferred to the assignment book as the boy's industrial rating. The class captain's report is a very valuable record. Not only does it provide information regarding the status of work, but it furnishes all the data for ascertaining the cost of labor neces-

NAME OF DETAIL <i>Ditching</i>				No. OF DETAIL <i>23</i>	
DATE <i>Sept. 15</i> 1913.				<i>Santiago Marcos</i> CAPTAIN IN CHARGE	
NAME	GRADE	No. OF HOURS	QUALITY OF WORK	AMOUNT ACCOMPLISHED	COST
<i>General Dactilus</i>	<i>VI</i>	<i>4</i>	<i>E</i>	<i>1.20 Cu. m.</i>	<i>24</i>
<i>Capitao Campos</i>	<i>VI</i>	<i>4</i>	<i>G</i>	<i>1.10 Cu. m.</i>	<i>24</i>
<i>Alfredo Candelita</i>	<i>VI</i>	<i>4</i>	<i>G</i>	<i>1.10 Cu. m.</i>	<i>24</i>
<i>Nilario Benito</i>	<i>VI</i>	<i>4</i>	<i>E</i>	<i>1.20 Cu. m.</i>	<i>24</i>
<i>Esteban Valtorika</i>	<i>VI</i>	<i>4</i>	<i>G</i>	<i>1.05 Cu. m.</i>	<i>24</i>
<i>Benito Oceano</i>	<i>VI</i>	<i>4</i>	<i>G</i>	<i>1.10 Cu. m.</i>	<i>24</i>
<i>Maximo Trigones</i>	<i>VI</i>	<i>4</i>	<i>G</i>	<i>1.00 Cu. m.</i>	<i>24</i>
<i>Tristano Suarez</i>	<i>VI</i>	<i>4</i>	<i>F</i>	<i>.95 Cu. m.</i>	<i>24</i>
<i>Enzo Carras</i>	<i>VI</i>	<i>4</i>	<i>F</i>	<i>.95 Cu. m.</i>	<i>24</i>
<i>Juan de Ordo</i>	<i>VI</i>	<i>4</i>	<i>D</i>	<i>.90 Cu. m.</i>	<i>24</i>
TOTAL		40		10.55 Cu. m.	240

A page from the class captain's book.

sary to perform a given task. By supplementing this information with prices of materials, one gets valuable data on all sorts of practical problems for use in the classroom.

To devise a system which gives daily credit to each boy for exactly what he does under circumstances where there are scores of tasks to be performed is not an easy matter without making the record so cumbersome as to require too much clerical work. After several experiments the writer hit upon the scheme of giving a permanent number to every activity and then to make all assignments by number. This solved the problem admirably. Here was a system flexible enough to cover all the manifold phases of an agricultural community and yet afford a reliable record with a minimum expenditure of time.

A brief study of the page from the assignment book and the

list of work details will make this clear. The numbers signify definite activities to which the student has been assigned during the month. Thus, 12 is the permanent number for construction and repair; 1 stands for plowing, 8 for planting, and 30 for harvesting. In the same way other activities are designated by number. Every time a new one comes up it is listed and given a permanent number which, in turn, is used in assigning boys to work. The assignments are made beforehand and the numbers given out at roll call. After using the numbers a short time the boys become so familiar with them that they know at once what to do as soon as their numbers are given out.

The class captain holds a position of real responsibility.

GRADE *IX*MONTH OF *November* 191*3*.

NO.	NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	AVERAGE %
1	<i>Abalos, Santiago</i>																															79
2	<i>Adlawan, Pedro</i>																															70
3	<i>Agapay, Antonio</i>																															80
4	<i>Aguilas, Pedro</i>																															71
5	<i>Ala, Benigno</i>																															84
6	<i>Alvarado, Esteban</i>																															78
7	<i>Alvarado, Valentin</i>																															76
8	<i>Alvarado, Felipe</i>																															76
9	<i>Alvarado, Valentin</i>																															77
10	<i>Alvarado, Pedro</i>																															80
11	<i>Alvarado, Pedro</i>																															78
12	<i>Alvarado, Antonio</i>																															80
13	<i>Alvarado, Antonio</i>																															79
14	<i>Alvarado, Antonio</i>																															84
15	<i>Alvarado, Antonio</i>																															79
16	<i>Alvarado, Antonio</i>																															80
17	<i>Alvarado, Antonio</i>																															79

A page from the assignment book.

There is nothing of the "make believe" in the fields that are plowed, in the crops that are grown, or in the buildings constructed. Given the men, materials, tools, and implements these captains are expected to get results, and are rated accordingly. A table is reserved for them in the administration building where they keep their records. They are at all times in close touch with the superintendent and instructors.

Four police officers, one for each grade, are responsible for the order maintained on the premises. They make arrests whenever necessary, help dress the lines at roll call, report on absences or delinquencies and, in a score of different ways, assist in the management. Minor offenses are tried in our own court where a boy judge dispenses justice.

List of work details.

Name of detail.	Detail No.	Name of detail.	Detail No.
Plowing	1	Rice harrow (suyod)	17
Hoeing	2	Irrigation	18
Cultivating	3	Garden and nursery	19
Wood wagon	4	Road building	20
Water wagon	5	Athletic field	21
Traction engine	6	Hauling construction materials	22
Lawn making	7	Ditch digging	23
Planting	8	Clearing	24
Hog yard	9	"Cook's police"	25
Rice hulling	10	Grading and leveling	26
Sawmill or shop	11	Sanitation and drainage	27
Construction and repair	12	Fencing	28
Forest	13	Blacksmith shop	29
Property	14	Harvesting	30
Dam construction	15	Miscellaneous	31
Well digging	16		

Sanitation is in charge of a capable sanitary inspector, also one of the boys. He keeps a close watch on sanitary conditions in the dormitories and the mess hall, builds sanitary closets, drains or fills in low places, in short, does everything to insure conditions which will contribute to the general health of the community. To accomplish this work, he is assigned a detail of boys over which he has charge as captain.

There are several other features which might be mentioned, but enough has been said to show how much the students themselves share in the management and responsibilities of the institution. Our best product is a human product; boys with more ability, more initiative, and more confidence; boys who are able to stand on their own feet, and who are qualified to direct some of the human energy which is everywhere going to waste. There will be many disappointments. Our community is not exempt from the failures which one meets in every community. We have our prosperous citizens and our spendthrifts; our industrious boys and our time servers. For every condition, good or bad, in the ordinary community, we have a counterpart. But this only goes to prove that our problems here are real problems, and in solving them we dare hope that a boy's success at the Central Luzon Agricultural School will count for his larger success as a citizen after he leaves school.

PHYSICAL IMPROVEMENTS.

The plans which have been adopted call for the construction of seven large buildings in one group, as follows: Mess hall, academic building, administration building, and four dormitories. Of this group only the mess hall has so far been completed. Besides this center, there are other buildings needed for the various industrial activities. These are nearly all con-

structed or are in the process of construction. They include the shop and machinery building, tool house, blacksmith shop, poultry yard, cattle sheds, implement shed, and hog yard.

This plan also includes the principal features pertaining to the development of the grounds. Roads, paths, the athletic field, campus, and plantings have all received attention. Many of these features have been completed and some are now being done. All of this work offers excellent practical training in the improvement of school and home grounds.

There are a large number of provisional buildings continually going up, of the kind seen in every native barrio. These serve as temporary dormitories and outbuildings of all kinds. They are valuable to the extent that they are typical of the kind used all over the Islands and because they furnish practically the only type of construction within the means of the average farmer. For this reason it would not be advisable to entirely dispense with this class of construction even though it does detract from the general appearance of the place.

Another important feature is the establishment and maintenance of a model farm of 16 hectares, as an object lesson to students who will most probably have to deal with the problems connected with the small homestead instead of the large hacienda. It is the purpose to include in this feature the necessary buildings, fences, field and garden activities, and as much of animal husbandry as can profitably be maintained on a farm of such small extent.

The building plan adopted for the school provides living accommodations for approximately 500 students. Every feature is designed to meet a definite need. The physical improvements called for in this plan will adequately provide us with a plant which will meet every requirement for years to come.

OPPORTUNITIES OPEN TO GRADUATES.

The world will never be able to dispense with men who can do things. A boy who has had the opportunity to develop initiative by putting his thoughts into action will outstrip his companions in almost every race which requires the use of brain and muscle. The knowledge and confidence that come to those who have actually done the thing and who know that they can do it again place a man at a tremendous advantage.

Most men get some training along this line in the school of experience. But their efforts are misdirected and the training is costly. It is the aim and purpose of this institution to supply in a measure the growing demand for men who can get results,

to give to each student every experience which he would naturally get were he thrown upon his own resources, and to direct his energies in such channels as will tend to make of him an economic leader.

The test, of course, is the human product. It is rather early in the history of the institution to judge of results obtained, as there has been only one graduating class since the organization of the school. Of the 16 in this class, 4 have continued their course in agriculture at the Agricultural College in Los Baños; 1 was retained as teacher in this school; 5 others have positions as industrial teachers; 2 are farming their own land; 1 is assistant agricultural inspector in the Bureau of Agriculture; 1 is foreman on a local pineapple plantation; 1 is taking a course in the School of Arts and Trades; and 1 is doing clerical work. As far as can be learned all of these boys are doing very creditable work along lines in which they have received training, with the possible exception of the last.



Improved papaya introduced by
the school.

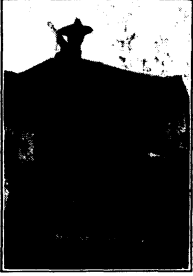
It is not to be expected that all of the boys who enter this institution will become industrial leaders. Many are constitutionally unfit to be anything but followers. However, the opportunity to develop is given them in the largest measure and it is confidently hoped that the majority will come out better qualified

in every way to meet the responsibilities of the progressive citizen.

A boy who has prepared himself for a useful life in the manner prescribed at the Central Luzon Agricultural School need have no fear that his services will not be required. As the latent resources of these Islands are made to serve mankind in an increasing number of ways, and, as industry gains a firmer foothold, this country will reap the blessings of peace and prosperity in a degree heretofore unknown. It is impossible for an institution of this limited size to even begin to supply the demand for industrial leaders called for by such a comprehensive program. But working hand in hand with others which give industrial training, it will send out a corps of young men who will hasten the day of economic independence.

FOOD CAMPAIGNS THROUGH THE MEDIUM OF THE PHILIPPINE PUBLIC SCHOOLS.

By NORTH H. FOREMAN, Inspector of School Gardens and Sites.



IN the world's history whenever emphasis was to be placed upon any undertaking intended for the social, moral, or economic advance of people it has usually taken the form of a popular campaign. In ancient times campaign work was mostly religious in nature. Most noted of such campaigns were the Crusades, which enrolled not only warriors but, in one famous crusade, even young children. In later times special campaign work has had to

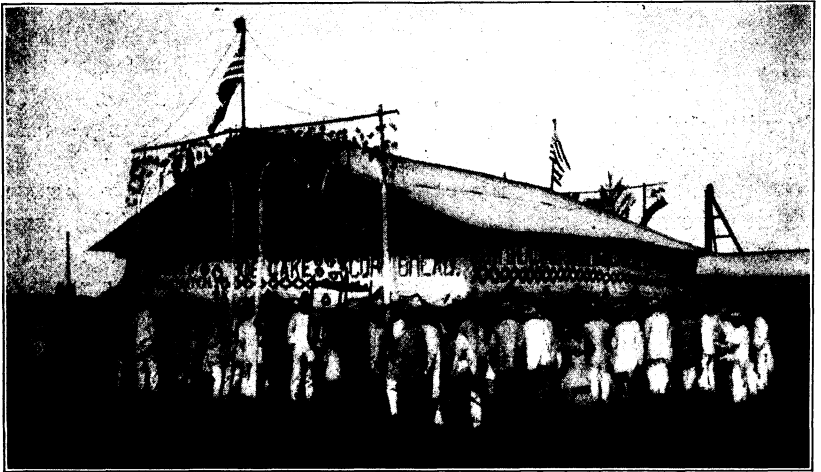
do with civic improvements and in extending the strength and commercial importance of various countries.

In most recent years a new type of campaign has sprung up which differs greatly from the various lines of work which have been fostered and encouraged through campaigns in the past. This new campaign takes the form of interesting the people in the production of food. As special campaign work its interest has been centered largely upon the young producers who are most easily reached and through whose influence the older people of the community are instructed.

The first real food campaign began in the United States in 1907. The work was extended through the means of special clubs which at first were organized and supported largely, and often entirely, by local contributions. Although without any definite head or organization other than the encouragement which the United States Bureau of Agriculture gave the work, these campaigns multiplied in the form of corn clubs, cotton clubs, girls' canning clubs, until in 1912 it was estimated that 75,000 boys and 25,000 girls were enrolled in this work. The girls' clubs were chiefly concerned with the growing of tomatoes and the canning of products for home consumption. The object was to aid in the readjustment of farm conditions by the raising of home supplies. Assistance and encouragement in various forms were given the work by newspapers and influential citizens who kept the public interested and provided funds for suitable prizes in the forms of cash, certificates, or special excursion trips. The last named is

the most popular and probably the most beneficial form of prize. In many places large cash prizes were awarded and in one county in Illinois 5 acres of land were given to the winner.

The first food campaign in the Philippines was launched in 1904. Instructions were issued that a school garden should be conducted in connection with every primary school. From this beginning the garden work has extended as regularly required industrial work in the public schools and is now pursued by the boys with the same attention that is given to arithmetic and other academic branches. This work has further multiplied in the form of home gardens, which are increasing at the rate of several thousand a year. The home garden movement is a steady cam-



A corn demonstration at Cavite.

paign with no reward other than the actual products which the boy harvests and takes to his home as his personal property.

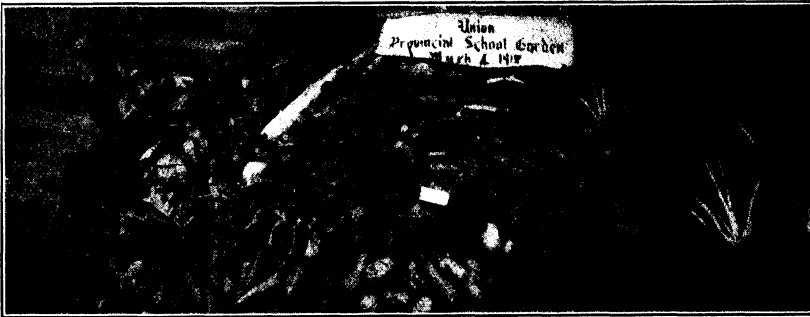
In 1910 the question of taking some one special food staple and encouraging its production by means of a special campaign was placed before the Director of Education and was given careful consideration, but a definite plan was not formulated at that time. The food shortage which was caused by the drought of 1912 furnished an opportune time for the inauguration of a campaign to encourage the production and use of corn, which was selected as the staple best suited for special campaign work in the Philippines. The climatic conditions of the country and the home surroundings and training of the people are such that the corn campaign was organized to provide for all features of the work.

It also became necessary to give emphasis to corn growing, corn cultivation, its preparation as a human food, and the introduction of a suitable mill for preparing meal. This work was accomplished by the following means:

(1) Corn-growing contests to instruct the people in seed selection, soil preparation, proper cultivation, and the saving of seed.

(2) Corn demonstrations to instruct the people in the various uses of corn. These demonstrations took the form of popular food demonstrations, market demonstrations, cooking lessons in domestic science classes, the distribution of corn recipes, and the introduction of a hand corn mill.

The work was popular and well received by the people. Unqualified support was given by the newspapers, officials, and private citizens. Teachers were enthusiastic in the work and a large enrollment was secured for the corn-growing contests.



Garden products.

Wherever popular corn demonstrations were held immense crowds were present. In most towns reports state that the crowds were the largest ever assembled for any public purpose.

(3) A civico-educational lecture was prepared for instructing the general public in the essential points to be observed in growing and using corn. This lecture was translated into the various dialects and given in all barrios in the Philippines. In this manner the remote communities were reached and the support of the people enlisted in this campaign.

During the year 30,327 boys were enrolled in the corn-growing contests and 6,000 girls were instructed in the preparation of corn foods. It is also estimated that fully 500,000 people attended the corn demonstrations and that one-third as many were present at the corn lectures. The first year's work closed with a final corn exhibit and demonstration as an educational feature at the Manila carnival, which was held in Manila, February 1 to 9,

1913. It was the first corn exhibit ever placed in Manila. The winners of the contests which were a part of the first year's work were Vicente Meria, Asingan, Pangasinan, for the quantity contest, and Catalino Alger, Calamba, Laguna, for the ear contest. Before this contest was officially closed arrangements had been made to continue the work another year in the form of a similar campaign with special emphasis to be given continual cultivation so as to keep the land producing throughout the year, either by growing additional crops of corn or by planting legumes or some desirable root crop. The work of instructing the people in food preparation by means of corn demonstrations in the public market and on special days, as well as in domestic science classes was continued in all sections of the Philippines. The plan of having a working demonstration where corn dishes are cooked in



Primitive method of traveling.
On the way to a corn demonstration, Zambales.

full view of the general public, the food served to the people, and printed recipes distributed was also continued.

Reports of the entries in the corn-growing contest for 1913 received from the various provinces show that 43,561 boys are enrolled.

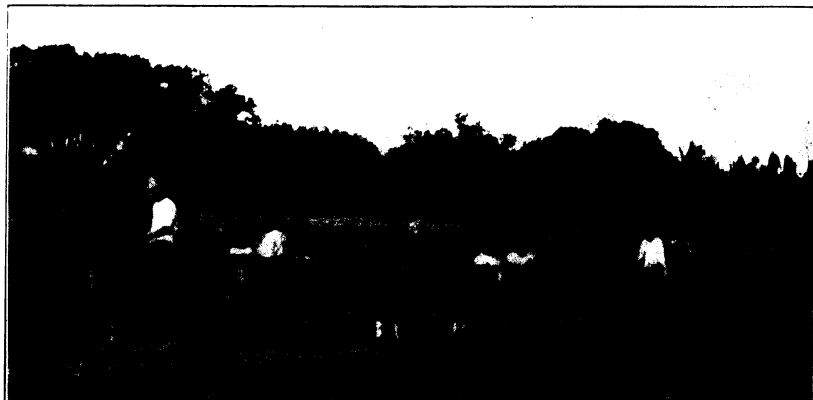
It is evident that the corn campaign has now reached a point where it is really a government enterprise, although it is still conducted by the Bureau of Education. A special building was erected at the 1914 exposition grounds for showing some of the important features of this work. This building contained the final corn exhibit which included corn from every province in the Philippines.

Various minor food campaigns have also been inaugurated and conducted in the public schools by the Bureau of Education. Each of these minor food campaigns is a continuous campaign which goes on from year to year as a regular part of the agricultural instruction given in the schools. The work is what might be called a quiet campaign in that no great publicity is sought and results are secured by the introduction of the work into the homes through the regular school agencies.

One of these campaigns pertains to the production and use of sweet potatoes (camotes). In large sections of the country, especially among the mountain tribes, this vegetable furnishes a large amount of the food consumed for several months during the year. A special campaign of this nature which has for its

object the growing and use of camotes has been organized in the public schools of Benguet.

The yam has also been taken up in a special way in connection with intermediate schools and home gardens. This plant is best



Corn demonstrators en route, Zambales.

known in the form of the two varieties which are tugué and ubi. Agricultural authorities and dietists claim that the small white tugué, which is common in many parts of the Philippines, is a better food than the Irish potato, which is at present imported into the Philippines in large quantities.



Interested visitors at a corn demonstration, San Mateo, Rizal.

The cultivation of legumes has also been encouraged in connection with the 1913 Corn Campaign. The emphasis given these plants is shown in the requirement that the corn plot shall be kept under cultivation throughout the year, either by growing subse-

quent crops of corn or by growing some legume. The need of this is evident, as the value of the legume as a soil enricher is important, as well as the food secured from its seed. Special plots of legumes for the purpose of selecting the most desirable varieties and of saving seed for distribution among the people are prescribed for intermediate schools.

Another minor campaign of which great results are expected in a few years is the campaign to promote the production and propagation of desirable fruits. In its true sense this is a food campaign which will ultimately be of as much benefit to the people as any of the other campaigns which show quicker results. The fruit campaign has been steadily gaining way for several years although it has received minor publicity on account of its position as one of the regular features of garden instruction



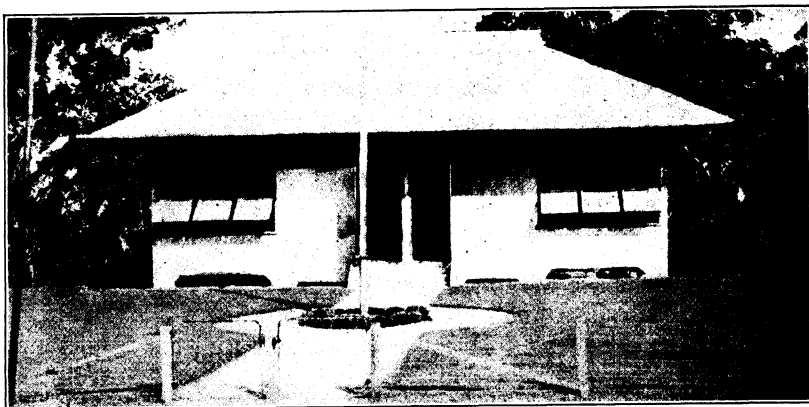
A "garden day" exhibit, San Juan, Batangas.

given in Philippine public schools. At present a large number of schools maintain small nurseries for the securing of desirable fruit seedlings and other young plants for use at the homes of the pupils.

There are also to be mentioned the agricultural fairs which have been encouraged for several years by the Bureau of Education in the form of "garden days" where the schools and people are asked to exhibit the agricultural products of the community. In a large number of localities these small garden days have become so large that they are real agricultural fairs. This special work is a true food campaign although an indirect one. There is probably no single feature of agricultural instruction which will awaken the pride of the community quicker than getting it interested in having annual exhibits of agricultural products. It is hoped that eventually the work will grow until the

town fiesta, which is at present the real holiday of each municipality, will be largely agricultural in character. At these agricultural fairs or "garden days," as the rural teacher often calls them, exhibits of the products of the school garden, home gardens, and of the community are displayed. Not only is a stationary exhibit placed but the school girls invariably have a working demonstration of the preparation of some one or more plants as a table food for the people. Recipes which do not demand ingredients or utensils not common in the locality are demonstrated and copies distributed free to the public.

The steady campaign which the Bureau of Education is carrying on for the propagation and distribution of desirable native vegetables is a minor food campaign, as it makes possible more and better food for the people. The leading feature of this work



Results of campaign for better school buildings and grounds.

is the emphasis given to the saving of seeds, which is a definite requirement for public schools. It is also much needed, as there is no place in the Philippines where seeds of the most desirable native vegetables can be secured. It also tends to call attention to the value of vegetables which are acclimated and liked by the people.

The Philippines offer opportunities for conducting continuous food campaigns which are not found in other countries where this work has been successfully demonstrated. Climatic conditions are such that corn is gathered for food each month during the year in some part of the Philippines. Likewise vegetables can be grown every month in the year by paying proper attention to the varieties planted. On this account it is apparent that a constant campaign will bring about great results.

It must not be assumed from the foregoing that only favorable conditions exist in the Philippines, as droughts, which are really more to be feared in tropical countries than in others, storms, and the ravages of locusts furnish drawbacks which are not to be lightly considered.

The results of the food campaigns encouraged by the Bureau of Education and now conducted almost entirely as a feature of the industrial work taught in the public schools, have been felt for their beneficial effects from the beginning. These results have become apparent in various ways, but the most conspicuous are:

- (1) Statistics showing larger corn production.
- (2) Corn as a human food appreciated by the people.
- (3) More food for the common people.
- (4) Food for every month in the year.
- (5) Better health conditions.
- (6) Tremendous decreases in rice importation which amounted to many thousand pesos monthly during the past year.

When this outcome is considered there is little doubt that food campaign work pays abundantly and that practical educational work will be instrumental in bringing about a marked improvement in the economic conditions of the Philippines.

SEND YOUR BOY TO AN INDUSTRIAL SCHOOL

Too large a class of young people in America, of both sexes, are seeking pursuits not requiring manual labor. Their education, as given at present in the high schools and colleges, tends rather to unfit them for the active industries of life in a country where the vast resources of nature are waiting for willing and trained hands to utilize them. The American boy, with his inborn ambition and natural ingenuity, would cease to regard manual labor as drudgery if his hand and mind together were industrially trained through the school period. (William Mather.)

o o o

Ask the laborer in the field, at the forge, or in the mine; ask the patient, delicate-fingered artisan, or the strong-armed fiery-hearted worker in bronze, and in marble, and with the colors of light; and none of these, who are true workmen, will ever tell you that they have found the law of heaven an unkind one—that in the sweat of face they should eat bread till they return to the ground; no, that they ever found it an unrewarded obedience, if, indeed, it was rendered faithfully to the command “Whatsoever thy hand findeth to do, do it with thy might.” (Ruskin: Work.)

THE COLLEGE OF AGRICULTURE.¹

By E. B. COPELAND, Ph. D., Dean.

THE College of Agriculture opened at the beginning of the school year in 1909, and was the first college to begin work as a part of the University of the Philippines. It occupies a site of about 95 hectares at the foot of Mount Maquiling, about 2 miles east of the town and station of Los Baños.

The college was established primarily for the purpose of furnishing proper higher education and training for farmers in the Philippine Islands. Incidentally, training is given for the service of the Philippine Government in agricultural lines. It has also a department of forestry which trains young men to enter the service of the Bureau of Forestry.

The chief course in forestry provides training for forest rangers. For this course, the Bureau of Forestry sends about 50 pensionados, and there are also students from China and Guam. The nominal entrance requirement for this course is two years of high-school work; practically, more than this is required, because nearly all recent appointments to pensions have been given to high-school graduates. The natural advantages for this course could not be better than they are, with the Maquiling forest reserve immediately adjoining the campus. The Bureau of Forestry has furnished, by detail from its corps, a very strong faculty, and the work in this course has at all times been exceedingly satisfactory. For those who are conspicuously successful as students, and afterward as rangers, additional instruction is provided leading to the degree of bachelor of science, and furnishing the necessary education and training for higher positions in the Bureau of Forestry.

In agriculture, three courses are given—A course of six years to which graduates of the intermediate schools are admitted; a course of four years for high school graduates; and a special course, which does not lead to a degree, of a single year, for the training of teachers of agriculture in the public schools. This special course is given to pensionados of the Bureau of Education. Appointment to these scholarships is made by the Director of Education on the recommendation of the division superintendents. Appointees must have at least two years' experience as teachers.

¹ Photographs by E. M. Ledyard.

The course of study, as compared with those in American colleges of agriculture, present two peculiarities. The first of these is in the scientific foundation which is given to the subject of agriculture. In its thoroughness, this is probably not very different from that in reputable American colleges, but it differs in that the chief emphasis is laid on botanical instead of chemical training. Chemistry is, of course, taught to all students, as are also zoölogy and physics. Chemistry is taught daily for two years, covering the rudiments of the subject, the application of chemistry to agricultural problems, and thorough laboratory practice in the chemistry of the greatest importance in Philippine agriculture, such as sugar, starch, and nitrogen determinations.

Botany is taught as the very basis of plant industry. It is



Chemical laboratory.

taught with the emphasis and thoroughness which can be seen to belong to it, when it is realized that plant production is essentially applied botany on a large scale, and that Philippine agriculture is almost entirely plant industry. Before students in the six years' course begin the study of field crops, they have two years of daily work in botany, in the laboratory, and in the field, and have learned from their own experiments how the growth and production of plants are controlled by the conditions under which they grow and by the treatment they receive. The students are drilled in the study of the growth of plants until they can determine easily and accurately the rate of growth; and they make these determinations in such numbers, that by comparison they can determine in a day whether or not any plant

is growing as it should. More than a half million such determinations have been made at the college. Water cultures and plot experiments with fertilizers with various plants are made as a part of the course in botany.

The other peculiarity of the course in this college is the requirement of enough practical work from every student to be sure that he is personally familiar with every ordinary operation on a thoroughly well-equipped and properly conducted farm, and can perform all of these operations himself. These operations have been grouped under some eighteen heads, and aside from the completion of the courses as catalogued, the candidate for graduation must have records showing that he has demonstrated his proficiency in each operation under each head. These operations range from the use of the hoe, plow, cultivator, etc., to the repair of machinery, the use of insecticides, the selection of seed, and the preparation of products for market. No graduate will be required to perform all of these operations in actual farming. Some he is sure to have to do himself; others he is more likely to direct, but he cannot be expected to direct competently what he cannot do; still others may confront him or may not. The intention is to prepare him for any test he is likely to meet.



Falls near college.

In connection with a College of Agriculture, as a part of the work of the students, and as a demonstration to the student body, there should be a model farm. In the early days of the college, the small number of students, the very limited supply of labor, and the bad condition in which the land was acquired, made it impossible to maintain a proper farm. These difficulties have now been outgrown, and the farm is a place where the students can see many crops raised as they would be on a model hacienda, except on a smaller scale, and where the students during the first two years of the course, when they are not yet themselves studying agronomy, acquire by contact an excellent, even if altogether superficial, idea of good tropical agriculture.

The work of the farm falls under three heads: Nursery, test plot, and field cultures. Small lots of seed and material for propagation are continually being received from various parts of the Philippines, and from many other parts of the world. As a rule, these are germinated in the nursery, and kept there until their test is completed, or they are ready to be transplanted to other parts of the farm. The test plots may receive plants from the nursery; or small lots of seed of field crops, garden vegetables, and ornamental plants may be planted directly in these plots. All of the work in the nursery and test plots is done by students, either as required work in connection with class work on the individual kinds of plants, or as work for an hourly wage. The fields are used for plants which have already been selected in the trial plots, and otherwise never, except to provide food for the



The college in 1909.

live stock on the farm. In order to furnish feed for stock, maize is raised on a larger scale than any other field crop in cultivation. Every plant of maize on the college farm is grown from selected seed. The next largest area is at present occupied by cassava (camoting kahoy). We know this to be the plant which will furnish food for the Filipino people at the lowest cost and least expenditure of human labor, and we believe that we can put this food into a thoroughly palatable form. Another large area is given to sweet potatoes, of which, as in the cases of maize and cassava, every plant is pedigreed. The most of the field work is done by hired labor. Students are required to plow, harrow, cultivate, etc., until they demonstrate that they can perform each operation well, and no longer. Other crops which have been cultivated here on what can be called a field scale are

coconuts, abaca, sugar, rice, various legumes, both for the crop and to improve the soil, and guinea grass, and other forages for the use of cattle and hogs. Everything that grows on the farm is under careful observation and is a subject for careful records. The number of distinct cultures on the farm during the past year was more than 2,000.

Farm work in a Government institution is of two kinds—experiment and demonstration. At the college, the larger part of the work is experimental. In the schools and on the Government farms of the Islands, the work should be almost or quite exclusively demonstrative. An experiment, to be really complete, must show the difference between good practice and bad practice.



First bridge at the college.

It is in the nature of experimental work that a large part of it will give results, which in the sense of an experiment are successes, although as a matter of practice they could only be regarded as failures. The student learns from this practical failure as well as from the practical success; while the mere observer of the experiment which does not show good practical results will learn nothing, and will be very likely to draw the erroneous conclusion that those who make the experiment do not know their business. A real experiment is, therefore, out of place in a farm or garden operated for the education of a community. Its place is on the college farm where its nature is understood by the student body; or on the private grounds of an individual who knows how to

conduct it, and to draw his lesson from it. During the first year of the college when but little land was in cultivation, practically all of the work had to be experimental, and many visitors carried away the impression that poor farming was the rule here. This condition is now thoroughly outgrown, and there is enough demonstration work, and this is conspicuous enough, so that while very many experiments are going on at all times, the appearance is usually rather that of a garden.

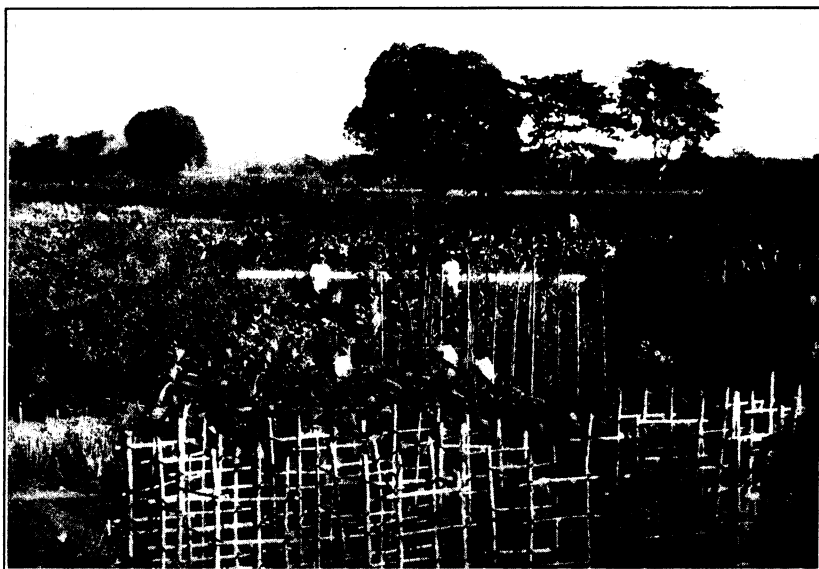
Agricultural investigation is carried on at the college by whole classes, by single advanced students, and members of the faculty. Of real investigation, that is, work intended to establish facts hitherto unknown here or elsewhere, and therefore valuable for publication in the Philippines and other tropical countries, fully 95 per cent of our work is done by individual students working under the direction of the members of the faculty. The faculty member called upon for the most of this supervision is the professor of agronomy. An idea of this work can be obtained from a mention of some of the subjects.

Working on rice, one of the first graduates found that the application of certain chemical substances, which are not plant foods but are rather to be regarded as stimulants, produce such an increase in the rate of growth, that the increased production on a field scale can be expected to pay for many times the cost of the substances applied. Another student has made a comparative test of 26 kinds of upland rice, and has determined their differences and the respects in which various ones are superior. This work was carried as far as various methods of preparation for the table. The work showed that 2 of the 26 stood decidedly above the others in amount of production. From the whole plot of each variety, the 4 best heads were selected and the seed from these was sown in test rows. This crop has also been harvested, and shows a marked increase in production over the average from the first crop. The statistics are not all tabulated, but it appears that careful selection of seed, an operation which would provide in a day seed enough for a great many hectares, has resulted in an increase in crop of about 20 per cent. Twenty per cent addition to the crop from 1 hectare would pay for a great many days' work. This seed is all saved, and after one more crop has been raised will be ready for distribution in small quantities.

The selection of maize seed has resulted in a very conspicuous increase in the crop and in the value of the single ear. Aside from this general work, one of the advanced students has produced a hybrid between an imported variety of white dent, and

the best local yellow flint, which promises to be a marked improvement over either parent in productivity. This hybrid will need to be purified by one more generation before it is ready for distribution.

One of our graduates who worked at sugar proved that the most of the commercial fertilizers in widest use in the Islands would not pay for their application to our soil, but that one of the mixtures paid a good profit above its cost. His work has been published in the Philippine Journal of Science. The work of other graduates is published in the Philippine Agriculturist and Forester, a journal managed and edited by the student body.



Students and gardens.

Our work with cassava began with the assumption that we had four varieties—the local one, and three others from Mindanao, which in various single respects were superior. A careful study has shown that instead of four clear cut varieties, there are a much larger number of distinct strains present, and these are now being bred out by pedigree cultures. It has already been established that some of our strains are very much more productive than any previously known to exist.

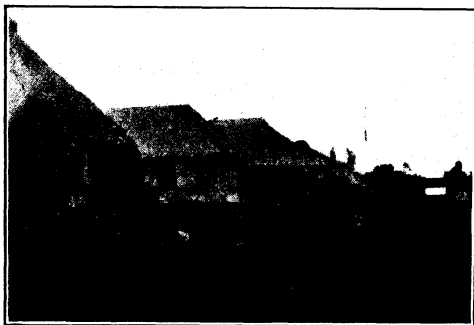
One of last year's graduates made a comparative study of 23 varieties of sweet potato. From this study it developed that some of the varieties were worthless and that some were very productive and also very savory. On the whole, the best of

these, according to local judgement, and the students ate enough to qualify as judges, is the variety known as Samar big yellow. Cuttings of these have been distributed and more are available.

Another student made a study of the value of the tree known as ipil-ipil, or Santa Elena, as a purveyor of nitrogen to the soil. The Department of Forestry has already settled upon this plant as the most valuable crop for planting on cogon land, to get rid of the cogon, and at the same time pay for the operation by furnishing a high grade of firewood. The annual yield of firewood according to exact figures which have been obtained from one plot is 88 cubic meters a year per hectare, a figure far in excess of what is said in text-books of agriculture to be the highest possible yield of dry material from a hectare of ground. The research of the student showed that at the same time that cogon was killed out and firewood was produced, nitrogen was

added to the soil to an amount which would have cost ₱55 per hectare at the lowest local price of nitrogen in fertilizers.

One of the present senior class is making a study of gabi (*Colocasia antiquorum*) and the related food plants. More than 60 supposed distinct varieties are included in this work, and on each of



Students' houses.

these he has determined the rate of growth and amount of production, and is making chemical analysis showing the food value of the harvest. One of these varieties has already been proven, on a trial plot, capable of producing a crop at the rate of 130 tons of "roots" per hectare, and these "roots" are more palatable than the gabi itself. A large part of this great production is water; but the dry matter in this and the cassava crop, like the wood crop of ipil-ipil, is very far above the supposed maximum possible production.

The most interesting work at present being done on the farm is probably that with tobacco. For our tobacco, we have used seed from Cuba, Sumatra, Connecticut, Syria, and other foreign countries and the Philippines. In short, it has included every well known tobacco variety supposed to be of particularly high grade. With several of the imported varieties, as well as the

native, very fine tobacco leaf has been produced. One of the students has produced a hybrid between Cuban Vuelta Abajo and Isabela tobacco which seems at present to be superior to everything else, and is being tested on a larger scale than any other variety.

Investigational work has also been done, and is being done, on coconuts, abaca, coffee, forage plants, a considerable number of less-known field crops, a large number of varieties of garden vegetables, and various plants of local use, some of which seem to be worthy of widespread cultivation. Work with very many kinds of fruit trees is also under way, but with these crops results necessarily take so long that we are not yet near them.

Careful experiments on the feeding of hogs have been carried on for many months and are still under way. One of our graduates made a study of the Philippine chicken, and came to the conclusion that badly as it compares with various standard breeds of chicken, as a source of either meat or eggs, it still does better than any standard breed could be expected to do under the same lack of proper treatment. This student found his birds pestered with fleas, which could not be kept away by the methods described in the poultry books; but he found a local tree, the leaves of which kept the nests entirely free of vermin.

As a matter of demonstration, silkworms are grown at the college, and all students are drilled in every step of the silk-producing industry. On a large scale, it would perhaps not pay to produce silk in the Philippines, but as a household industry it deserves to be taken up throughout the Islands.

Almost every province is represented among the students, the largest numbers naturally coming from the neighboring Tagalog provinces. The students from some of the provinces have organized provincial clubs, and there are also larger clubs of students from groups of provinces; and still others composed of



Judging chickens.

students with special interests, such as oratory, German, or tennis.

All of the students are organized into a student body, which has control, through its committees, of athletics, social affairs of all kinds, and publications. The publications are *The Plow*, an annual, and the *Philippine Agriculturist and Forester*, intended to appear monthly during the college year. This magazine has published the theses of the graduates, and many other papers by students, including the results of investigations on the ground, or of local industries of the Philippines, such as the duck and egg business of Pateros, and the pandan industry of Majayjay. It has already published more scientific work by Filipinos than any other journal has ever done.

Nearly all of the students live in groups, each occupying a house. The most of these houses are on the campus, some owned by students, some by the Bureau of Forestry and occupied by its pensionados, and some built by a club organized for the purpose. Board was furnished at cost at ₱8 a month for a part of this year, under the management of a member of the faculty. This undertaking is now in private hands, and the price has been raised to ₱10. The living of some students costs considerably more than this, and of others a little less. A great many of the students are self-supporting. There are various opportunities for students to earn their way. The college employs all students who desire work, at field work at the rate of 10 centavos an hour, so long as the class work of the student is satisfactory. Among the more advanced students a considerable number are employed at a monthly wages of ₱10 to ₱25, as assistants in offices, laboratories, the library, and in the fields and as janitors. Other students are employed by members of the faculty. One group maintains a store which sells supplies of all kinds wanted by the college boy. The most prosperous self-supporting student is probably the one who furnishes music for the *Los Baños cinematograph*.

Lively interest is taken in athletics, and in the intercollegiate contests. Agriculture has to date the best record of any of the colleges. Remote from doctors and hospitals, the student body seems to impress every visitor as made up of exceptionally strong and healthy young men. For this, the outdoor life and fresh air are probably largely responsible, but the neatness, openness, and general sanitary condition, which have brought the student community the name of a model *barrio*, are entitled to a share of credit.

The college intends that its graduates shall be good men and good citizens, as well as good farmers. The barrio is maintained as a barrio should be, and students in it are required to keep their premises presentable at all times, and to live as young men should. The student body was organized and given a large amount of responsibility, to provide real and practical training in civic affairs. The college is young, and the course of study long. Not many farmers have yet been graduated, but every graduate has found employment awaiting him. The admirable spirit of the students, individually and collectively, is so far the best evidence of the kind of work the college does.

CURRENT COMMENT ON MANUAL TRAINING.

"One of the chief values of shopwork, weaving, gardening, etc., even in elementary schools, is that they introduce the pupil to natural facts and forces and give him a motive for becoming thoroughly acquainted with the concrete facts and laws of nature."

"The best values in manual training are in the habits, ideals, and attitudes it fosters. It interests many pupils who are not successful in other school studies, gives a sense of capacity, power, and effectiveness to many a boy who is almost ready to accept the teacher's estimate of incapacity and worthlessness."

"Shopwork systematically carried out engenders a habit of industry and observation that cannot be acquired in any other way. It gives to the inmate a knowledge of the difference between accuracy and vagueness, and an insight into the complexity of everyday life, which, once wrought into the mind, remains there as a lifelong possession. Work in the shop will confer upon the inmate precision; for under a competent instructor he must do the work that is laid out, definitely right or definitely wrong."

"It is only when one has experienced the shock of misfit between what he has thought will hold, on the one hand, and what he finally finds to be true, on the other, it is only then that one is really sharpened to the point of developing good judgment. Leave out the test of practice, and people can think all sorts of things and be entirely wrong. We need headers such as practice brings, in order to develop sanity or efficiency. Manual training, because it provides this test, is superior to many other subjects. A well-educated man is one, therefore, who can do as well as know, and efficiency is a good term for the statement of the aim of education, because it includes these two factors."

NOTES ON THE WORK OF THE BUREAU OF AGRICULTURE.¹

By W. K. BACHELDER, Philippine Normal School.

NO survey, however brief, of agricultural education in the Philippines would be complete without mentioning the Bureau of Agriculture, which was one of the first bureaus organized under the present Government. The work of this important Bureau is as clearly defined as is that of the Bureau of Education. It directs its energies to work among the actual producers—the adults—while the Bureau of Education deals primarily with the potential producers—the children.

For administrative purposes the Bureau consists of the following divisions: Finances and property, clerical, animal husbandry, veterinary, agronomy, horticulture, fiber, demonstration and extension, publications, statistics, and machinery and construction. The chief of each division is directly responsible to the Director for its success.

The experimental and scientific work of the Bureau has been extended as far as practicable during recent years with the purpose of discovering improvements possible to Philippine Agriculture. As it is appreciated that the results obtained are of value only in so far as put into practice, a carefully planned and skillfully managed campaign is being carried on to get the Filipino farmer to act upon the suggestions of the Bureau. This effort, most of which is known as demonstration and extension work, is accomplishing much and is deservedly popular.

It is believed that a better understanding can be reached through a brief discussion of the work of these divisions of general interest to the public.

PUBLICATIONS.

The publications of the Bureau of Agriculture consist of the Philippine Agricultural Review, published monthly; bulletins, issued from time to time on various subjects of interest to agriculturists; and circulars which give a more concise treatment of some agricultural topic. The publications usually appear both in English and Spanish, and a few are also published in one or more native dialects. These publications afford a valuable means both of making permanent record of the practical results secured

¹ Photographs by courtesy Philippine Agricultural Review.

from scientific research and experimental work and also of disseminating this information among the farmers of the Islands. It is interesting to note that the Philippine Agricultural Review has been widely quoted especially by agricultural periodicals in the tropics.

FIBERS.

To the fiber division belongs the important work of encouraging the production of fiber plants, especially abaca, of improving the methods of cultivating, marketing, and harvesting them, and of raising the standard of the product. So general is the production and preparation of fibers of one kind or another and so numerous the ways in which they can be utilized for local use and for export, that the work of this division probably benefits indirectly every municipality in the Islands. Our most important export product is abaca. Maguey is largely used locally but is also exported. The work of the Bureau must of necessity be concerned for the most part with abaca, maguey, and kapok although much attention is given to others, especially cotton and household fibers.

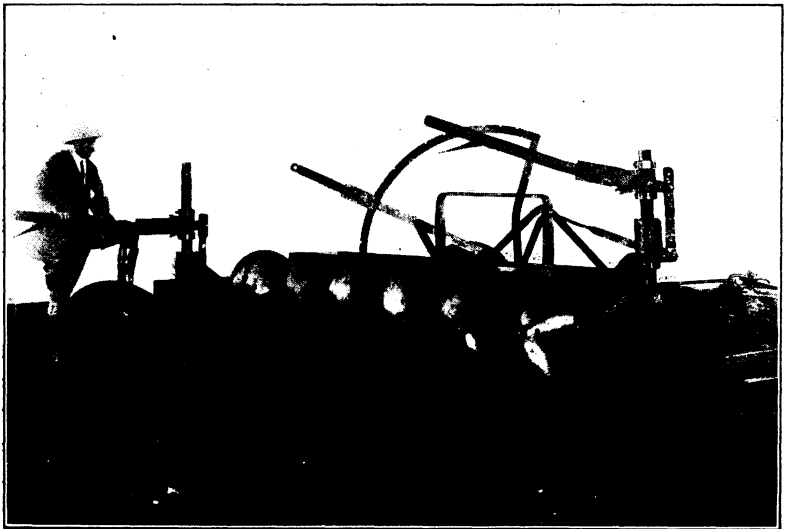
Abaca, next to rice the most important crop in the Philippines, owes its place in the world's markets partly to the length and whiteness but chiefly to the strength of its fibers. The higher grades are practically free from competition but the lower grades compete with fibers which can be grown and marketed more cheaply in other countries. The less the quantity of inferior grades placed upon the market the more the abaca industry will thrive, but it will surely decline if the production of inferior fibers is increased. Hence the importance of the effort to raise the standard of the product. Improvement in the methods of cultivating, harvesting, and marketing abaca is expected as a result of the demonstration and extension work in the hemp producing provinces.

There are immense tracts of land in the Philippines admirably suited to the production of maguey but unsuited to the growth of other Philippine plants. Maguey fiber is probably superior to its competing fiber, sisal, which also grows well in these Islands, but the Philippine product in either case cannot compete advantageously with that from other countries without better methods of fiber extraction. The Bureau of Agriculture has shown this fact, but as the maguey and sisal planters have isolated holdings and small capital, they can with difficulty adopt up-to-date methods. It is evident that the results of the work of the fiber division must be sought in the fact that every

year a larger number of planters put into practice the recommendations of the Bureau and consequently secure for themselves and for all handling their fibers larger returns for the money and labor invested.

MACHINERY AND CONSTRUCTION.

The machinery and construction division is occupied mostly with machinery and construction work for the use of the Bureau. It should be noted, however, that attention has been invited to the Planet, Jr., wheel hoe and cultivator which should prove to be very valuable to small farmers in the Philippines. This division has made an important contribution to Philippine agriculture



A heavy six-disk plow designed to plow any class of soil in the dry season; gives excellent results.

in the matter of power plowing. The plows which had been tried by private individuals had been too light in construction and were soon broken beyond possibility of repair. The Bureau secured from the United States the plow which was considered to be the best manufactured. This also proved to be too light. Plows were then designed which worked well and which will undoubtedly come into general use on large plantations.

VETERINARY.

The veterinary division has had a most difficult and thankless task. Rinderpest and surra were introduced into the Philippines before the American occupation. As animals died off others

were imported which oftentimes were infected and later died of the disease, thus continuing its spread. At present only four provinces and twelve towns are infected with rinderpest, the lowest since American occupation. Doubtless every possible precaution will be taken in the future to prevent the importation of diseased animals.

AGRONOMY.

The work of the agronomy division is most important to the agriculture of the Islands but it is work of which the general public sees little. At the present time investigations are being carried on with rice, sugar cane, corn, cover crops, and grasses. Few people realize that nine hundred ten varieties of rice are grown in the Islands and that the rice crop would be much larger were all inferior varieties eliminated. The agronomy division is working towards this end and by breeding and seed selection is improving the best varieties. Several imported varieties of sugar cane are being tried out. By seed selection and good cultivation and breeding a better variety of corn is being produced. Tests with cover crops have shown that the native bean called balong and the New Era cowpea are the best for that purpose, and should be cultivated extensively as rotation crops. Considerable effort has been made to secure a good hay crop. Two grasses which seem to be suitable are being tried out on a large scale.

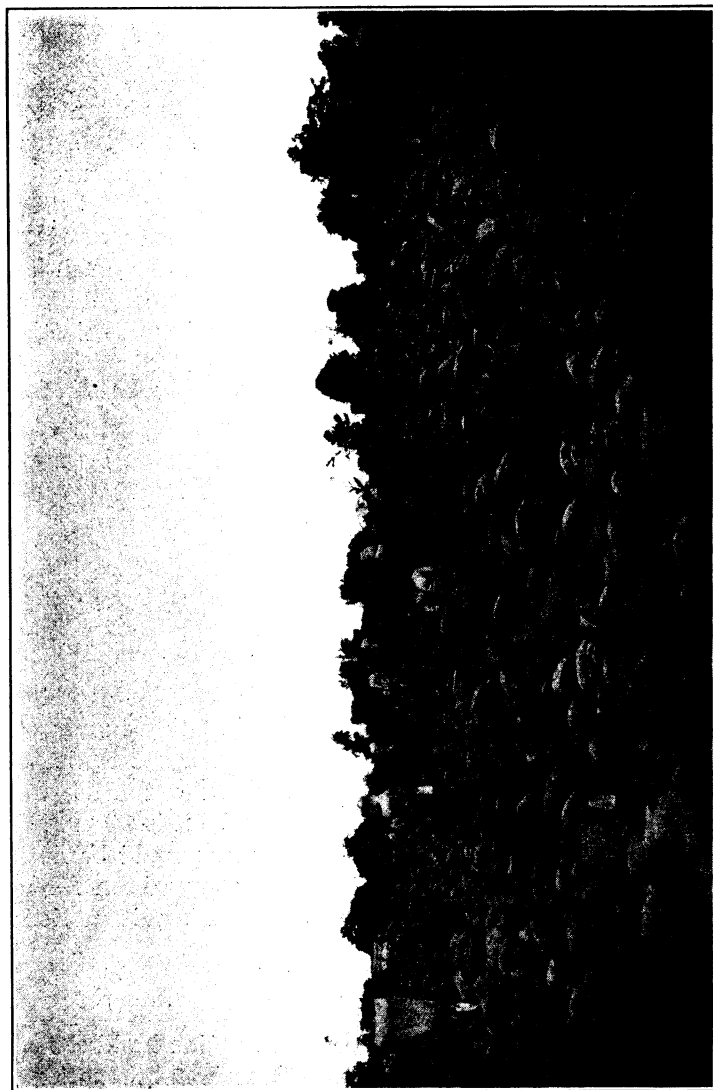
ANIMAL HUSBANDRY.

This division cares for all the live stock belonging to the Bureau, purchases stock in the Philippines for other bureaus, and carries on public live-stock breeding at the various agricultural stations, keeping stallions, bulls, and boars, for the use of the public. In addition to this, stallions are available in 20 provinces. While these animals are not used as much as could be desired, nevertheless, in those localities where they have been for some length of time an improvement in the live stock is quite noticeable.

HORTICULTURE.

The work of the division of horticulture is interesting and of great value to the country. Very little attention had been given to this phase of agriculture before the American occupation, but now interest is steadily increasing. The attention given to school gardening by the Bureau of Education has helped materially to arouse interest in it. Attention has been given mainly to the cultivation of fruits and vegetables although some effort has been made to cultivate and extend the use of ornamental plants includ-

ing annuals, aroids, orchids, palms, and shade and ornamental trees. The striking display of cannas at the Singalong experiment station has attracted much attention and has demonstrated what gorgeous effects can be easily secured.



Tobacco field, showing "bagging" method of seed selection.

The division of horticulture has charge of the work of seed distribution, of introducing new and improved varieties of vegetables and fruits, of improving and introducing into parts of the Islands where they are unknown various native vegetables and

fruits. It has also the work of studying insect pests with a view to their extermination. More than ₱5,000 worth of seeds alone are distributed every year. During the busy season about 1,000 packages are distributed daily. No requests are denied. Im-

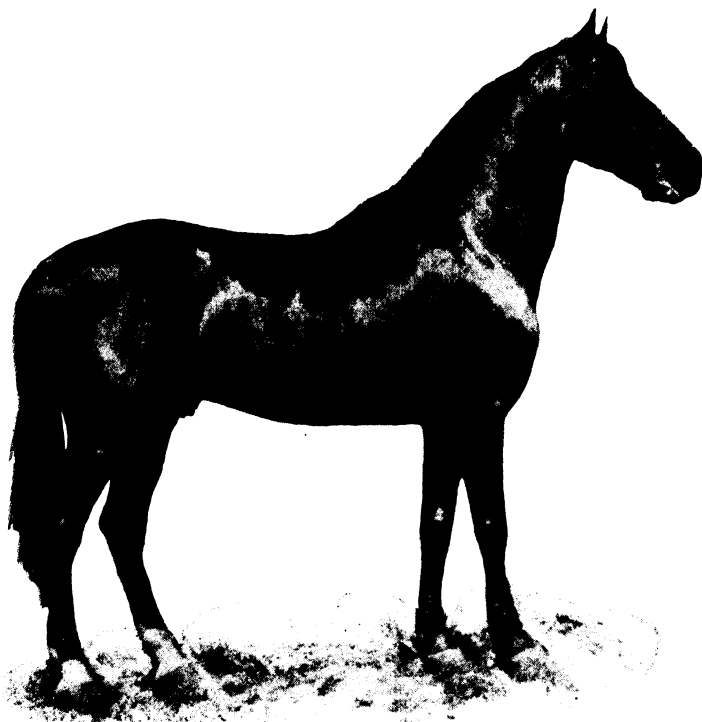


Live stock shown at the Nueva Vizcaya Agricultural Fair.

ported seeds lose their vitality very quickly in this climate and oftentimes fail to germinate because the recipient keeps them for some time exposed to the atmosphere instead of keeping them in tightly corked bottles. Some attention has been given

to raising seed in the Islands, as in the case of roselle, cowpea, and seguidillas.

Frequently some valuable plant or fruit is featured and very generally introduced, as in the case of the improved papaya, roselle, and canna. Cowpeas and seguidillas will receive like attention. The division deserves much credit for the introduction of many new and valuable plants. Roselle, which is one of these, will undoubtedly prove to be both popular and profitable.



Morgan stallion "Duke of Albany."

The native seguidillas compare favorably with string beans minus the strings. It bears heavily and grows luxuriantly, requiring little care. Lima beans are being grown quite extensively for seed at the present time. Pineapples are being grown which would seem to equal the famous Hawaiian fruit. The Bureau has a large collection of bananas which is by far the largest in the world. For the first time in the history of tropical horticulture, a definite attempt is being made to work out the

synonymy of the world's banana and plantain varieties. Of the 500 or more supposedly distinct sorts now under observation



"Victor" Roselle.

at the Singalong experiment station and Alabang stock farm, it is believed that about one-half will be found to be of more or



a. Marcottage method employed in the Philippines; *b, c.* Marcottage methods employed in the United States and Europe.

less distinct sorts. Our neighboring tropical countries have most generously contributed to this international collection and have a right to look forward to the publication of a bulletin by the Bureau of Agriculture which will set at rest a large number of disputed questions along this line and act as a guide-book to the future banana planter of this and all other countries.

Much attention has been given to importing and improving citrus fruits. There is at Lamao the largest collection of citrus fruits in the Far East. The work along this line which is being done at the present time will undoubtedly bring large returns to the people of these Islands. The distribution of the world's best oranges, pomelos, limes, and lemons to the Philippine planter has already begun. The seedless breadfruit has been successfully propagated by using a piece of a root as a cutting; this will make it possible for every Filipino who has any land at all to have one of these ever-living food trees. Another fruit which should prove to be very valuable in the Philippines is the cherimoya which has been successfully grafted on the more vigorous mamon stock and is now growing well at Lamao; several hybrids of this and other annona species which bid fair to surpass anything else of the kind are now being propagated there.

Insect pests are numerous and consequently there is always need for disseminating information regarding their treatment, and also for studying others that have not yet been successfully treated.

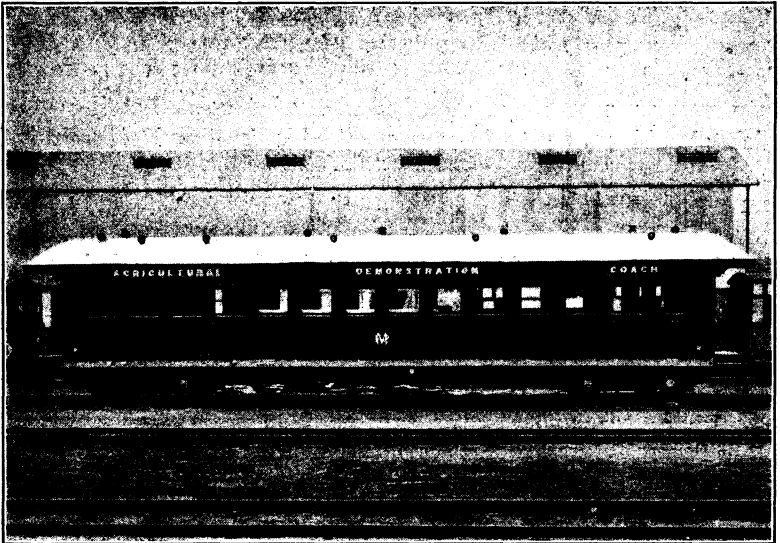
DEMONSTRATION AND EXTENSION DIVISION.

This division measures its results in larger and better crops grown by Filipino farmers who put into practice upon their own farms the recommendations of the Bureau. The results of other divisions are made of practical value by this division. During the three months following the first period of demonstration work in one province more corn was hauled by the railway than during the three years previous and in another more agricultural implements were sold in six months than during the preceding four years. These results are secured by means of coöperative demonstrations, demonstration stations, lectures, and in Luzon by the use of the demonstration car.

COÖPERATIVE DEMONSTRATIONS.

An agricultural inspector visits the farmers of a given locality and from the more progressive secures a number of coöperators, men who are willing to work at least a part of their farms

under the direction and with the assistance of the inspector. The latter assists them to select their seed or if necessary provides them with it. He assists each man in plowing his land, furnishing for the purpose a small inexpensive but modern plow and encouraging him to secure one like it. After the ground has been properly prepared he assists him in planting the seed in the most approved manner and later in cultivating the growing crop and protecting it from the ravages of insects. He also assists in selecting new seed and in harvesting the crop. As a result the farmer secures a larger crop and seldom fails to interest his neighbors in the new methods as well as in the



A—Agricultural demonstration car.

results obtained. The average yield of corn in Cebu in 1912 was 32.5 cavans per hectare while the demonstration plots yielded 59.1 cavans. The number of plots supervised has been limited by the number of inspectors available and many requests for assistance have to be refused for lack of funds and inspectors. Farmers are ready and willing to adopt modern methods which have been demonstrated by one of their number to produce larger results.

DEMONSTRATION WORK.

The headquarters of the coöperative demonstration work of a given locality are at the demonstration station. There certain lines of work can be carried on to better advantage than on

the farm and new inspectors are trained by experienced men. Seeds and plants are grown for distribution and in some cases are produced in sufficient quantity to pay a part of the cost of operating the station. Frequently live-stock breeding is carried on as a part of the work; at the Batangas station this has been the most successful feature of the work. The chief advantage of the demonstration station lies in the fact that demonstrations can be carried out on a larger scale than would be possible on the farms and that they can be observed by a larger number of people. The demonstration station and coöperative demonstrations are carried on under the same direction and each makes



B—Interior of demonstration car.

the other more effective; together they accomplish much for the improvement of agricultural conditions.

DEMONSTRATION CAR.

Coöperative demonstrations together with demonstration stations are undoubtedly the most effective means of bringing about immediate development of agriculture. A larger number of people can be reached in connection with lectures and the demonstration car. This work is carried on very much like that which has proved so successful in the United States. The car was built by the railway company for the purpose. Lectures and exhibits are furnished by the Bureau of Agriculture. These exhibits include pictures of farm operations and products, vege-

tables, implements, and agricultural products of superior quality. The stereoptican lectures are given in any building that is available, frequently in the cock pit, and sometimes in the open air. Packages of seed and also various publications of the Bureau are distributed free. The attendance has varied from 50 to 1,500. Much enthusiasm and appreciation have been shown and it is believed that many of those present go back to their farms and do better work.

SUMMARY.

A careful study of the work of the Bureau of Agriculture must convince any unprejudiced observer of its practical value to the country. It is the sincere wish of everyone desiring the prosperity of the Philippines that this work may continue until these fertile Islands become the garden of the East and each inhabitant is able to secure all of the necessities and many of the comforts and luxuries of life.

And here we have at last an inevitable distinction. There must be work done by the arms, or none of us could live. There must be work done by the brains, or the life we get would not be worth having, and the same men can not do both. There is rough work to be done, and rough men must do it; there is gentle work to be done, and gentlemen must do it; and it is physically impossible that one class should do, or divide, the work of the other. And it is of no use to try to conceal this sorrowful fact by fine words, or to talk to the workman about the honorableness of manual labor and the dignity of humanity. "Fine words butter no parsnips." (Ruskin: Work.)

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Life is fundamentally hunger for food and physical comfort, and the school for women which begins its work with these elemental needs is "on to its job." (Musselman.)

o o o

Labor is discovered to be the grand conqueror, enriching and building up nations more surely than the proudest battles. (Wm. E. Channing.)

o o o

Moderate labor of the body conduces to the preservation of health and cures many initial diseases. (Dr. W. Harvey.)

o o o

It is true that he who does nothing for others does nothing for himself. (Goethe.)

EDITORIAL.

In order to administer the industrial work of our schools in accordance with governmental regulations, it is necessary for those in charge of vocational work to pay particular attention to various kinds of cards. Property cards must be kept accurately in order to keep a proper accounting of every item of Government property. Library cards are kept in accordance with the system adopted by the National Library Association to keep track of all library books. Job cards are carefully maintained, in order to have an unquestionable record as to the material output of the shop, farm, or domestic-science department. Record cards are also kept to show the standing of the pupil in his studies.

**Pupil's Record
Cards.**

A comparison between the cards kept as property or money records and those kept as pupils' records will show the most casual observer that the former, in most cases, are much more complete than the latter. Apparently, this state of affairs indicates that the world-old story of placing property rights above personal rights is being repeated in our school system. This, however, is not the case. The completeness of the property record springs from the fact that the property handled is government property and its slightest misappropriation entails very serious results. The pupils' records showing the vocational work accomplished have naturally been based upon those used in the recording of academic progress. For example, in academic work a grade of 80 per cent in first-year algebra is a sufficient record to give any academic teacher a fair idea of what the pupil has accomplished. A grade of 80 per cent in first-year woodwork, however, does not signify very much. The system used at the Central Luzon Agricultural School, as illustrated on pages 596 and 597, is a step in the right direction toward the keeping of a real record of the pupil's industrial achievements. Such a system shows at a glance the various branches of the vocation which the boy has mastered. It helps to overcome the invariable tendency of an industrial teacher to keep a pupil upon that line of work in which he is most proficient so as to produce the greatest material results for the school. The study of its use and application is recommended to all who believe that the personal record is of even more importance than the property record.

The history of the development of nations shows that, by the creation of new industrial problems, man is ever modifying his environment, which change influences the habits of man, increases his intelligence and causes the forces of nature to act and counteract until the whole trend of man's existence is constantly upward.

Agricultural
Education.

While new sciences have been evolved and new occupations opened up, the process of material development of all nations in modern times has been largely in agricultural education—in the bringing forth of new foods for man, beast, and plant, and in so changing the habits of old plants that they are worth to the world much more than in their original form. Likewise it has been said that the feeding instinct is the great motive power that drives all life and that makes all living things active. This desire that all possess has for ages sent not only adventurers and settlers across wide unknown seas and settled the fertile districts of the world but also impelled nations to war. It is also an instinctive and entirely human impulse because, with the body poorly nourished, the child is listless in the schoolroom, the statesman dull in managing the government and the worker unable to gain results in the field or factory.

With this natural law always in force agricultural education needs to be emphasized in all countries, for with increased transportation facilities for both men and products fertile land cannot long remain unused. The progress of the world refuses to recognize such dormant rights and where a nation wishes to retain her fertile fields for her own people she must till them. Thus agricultural education goes on in older countries to preserve the soil fertility and still obtain increased results, and in newer communities to place the soil under man's direct control. It was agriculture that made and is still making the United States. It is the basic wealth of most nations, for a country's real wealth lies in her well-fed and contented population as much as in her financial credit at home and abroad.

While agricultural education may be of various types and conducted through many agencies, the main features of modern day instruction deal with training the boys and girls in school, with practical demonstrations and with bettered home conditions. It is educational in every sense of the word and the schools are in a position to see that the fullest measure of success is reached. A nation's growth lies in the training given her children, and the schoolmaster to a large extent molds this growth by precept and lesson in the classroom and by

practical demonstrations of applied principles under his supervision at the pupils' homes. The demonstration is a real object lesson carried on under the observation of the farmer on his own farm with the work done either by himself or by his children as supervised school work. It is a system of adult education of the highest sort which reaches the home life and takes cognizance of home conditions, whether it be concerned with the introduction of a new plant, better cultivation, new cooking recipes or the proper use of a new tool.

The question of establishing a proper basis for distributing the receipts from the sale of articles fabricated by pupils is closely associated with that of arriving at a proper basis for fixing prices. The cost of labor is the controlling factor in both. One of the aims of industrial instruction is to teach the pupil the value of his labor. It is essential that he receive as his share of the finished product a just return for the labor expended, which should approximate the amount that an experienced worker in the shop, home, or field would receive. The tendency in distributing the receipts from the sale of school-made articles is to give the pupil too large a share of the profits. Cases in point may be cited where an article was made under the supervision of a teacher, was transported to the place of exhibition, displayed and retailed by school authorities, and the entire amount received, over the cost of material, was returned to the pupil. Manifestly this leads the pupil to have an exaggerated idea of the value of his labor and to believe that the industry is more remunerative than is actually the case. The distinction between the actual cost price of production and the selling price—whether it be the retail, wholesale, or local manufacturing agent's price—should be clearly defined when the distribution of receipts is made, and care should be exercised that the pupil's share is not greater than would be received by an expert worker outside of school.

This applies equally to all kinds of industrial schools and to industrial classes in primary and intermediate schools; but the unsatisfactory condition brought about by a disregard of the principles involved is most evident in the household industries. Pupils who receive too large an amount for their work in embroidery and lace making are not inclined to take up this work at a lower wage when they leave school.

The Pupils' Share
of the Finished
Product.

The money received from the sale of a school-made article will, in the majority of cases, be distributed under three heads, (a) the cost of the material used, which will be returned to the fund from which the material was purchased, (b) the cost of the labor, which will be paid to the pupil or pupils who made the article, and (c) an amount comprising transportation and display charges, if any, and the profit of the local manufacturing agent, the wholesaler, or retailer, according to the method of disposing of the article. Different means have been employed in disposing of the fund under the third heading. Some teachers have included it with the amount paid to the pupil, others have let it accrue to the municipal or provincial fund, as the case may be, and in some instances it has been turned into a pupils' fund. The practice of giving to the pupil more than he has earned is wrong in principle; the other alternative is to allow this money to accrue to the municipal or provincial fund, or to a pupils' fund. The latter plan has been found to be satisfactory in many instances and is provided for by Circular No. 142, series 1912, of the General Office. The pupils' fund thus established is used as a special fund for athletics, libraries, and other school activities or as a reimbursable fund for the purchase of industrial supplies. The nature of this fund and the uses to which it shall be put will have to be determined locally.

The next issue of THE PHILIPPINE CRAFTSMAN will be the exposition number. It will contain an account of the Bureau of Education exhibit at the Second Philippine Exposition and will be copiously illustrated. As the exposition did not close until the 16th of February and as our copy for THE PHILIPPINE CRAFTSMAN usually goes to the printer on the first of the month, the March number will be delayed several weeks. It was felt, however, better to delay the March number so as to include the exposition write-up rather than to hold over the exposition material until next July. Subscribers who expect to change their places of residence during the month of April should notify the business manager of the address to which they desire the March number mailed.

The present trend of education seems to be, to make these three subjects—the home, agriculture, and industry—the basis of universal, democratic education. (Muller.)

PSYCHOLOGY AND JOBS.

Are you looking for a job as motorman? Prove your ability by psychology. Will you make a good chauffeur? Submit to a mental test and find out. Would you be a successful telephone operator? You will save the company's time and your own by undergoing a psychological examination to determine your fitness for the position. Psychology plays a prominent part in the various plans for vocational guidance currently reported to the United States Bureau of Education, by means of which scientists hope to devise ways of measuring people with regard to their qualifications for certain kinds of work.

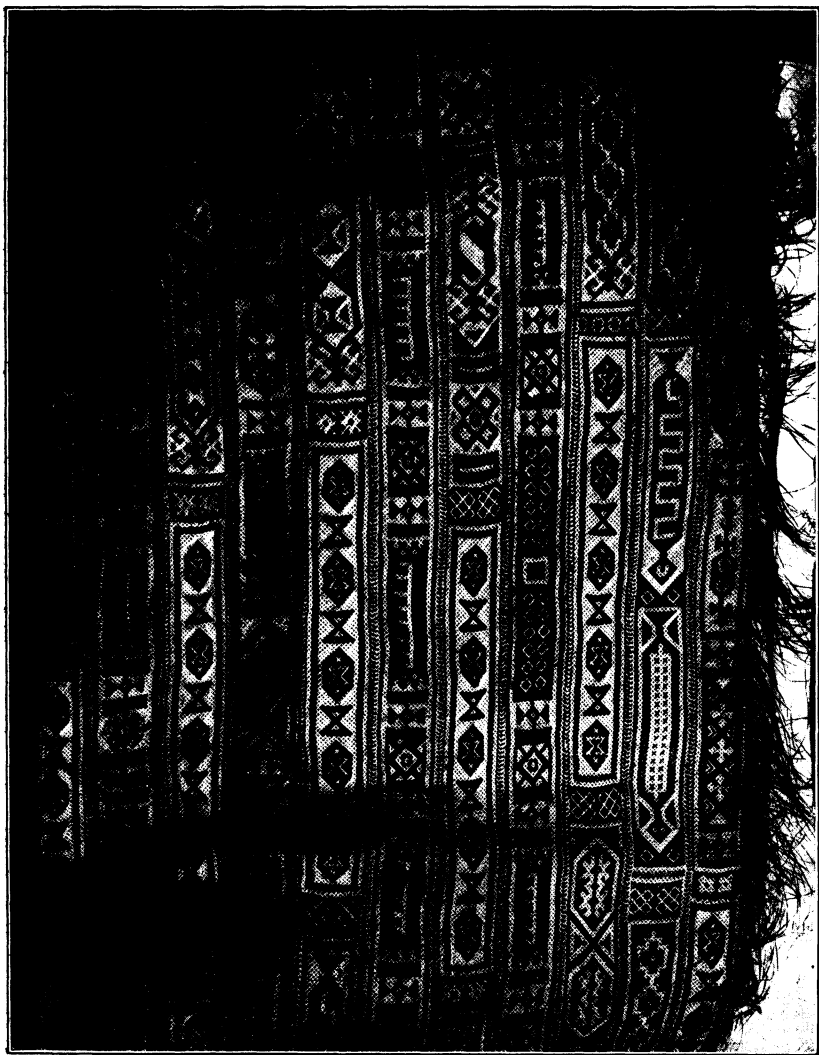
Dr. Leonard P. Ayres, of the Sage Foundation, has just summed up a number of psychological tests for positions actually put into practice in modern industry. Thus the American Telephone and Telegraph Company engaged Professor Munsterberg to introduce a test for determining which applicants were likely to prove good telephone operators. The girls were examined with reference to "memory, attention, general intelligence, space perception, rapidity of movement, accuracy of movement, and association." The results showed that the girls who qualified in the tests were the most efficient in practical service, while those who stood at the foot of the list failed later and left the company's employ.

Professor Munsterberg has also tested street-car motormen by elaborate apparatus, with a view to selecting those least likely to be responsible for accidents. As a result of his experiments he came to the significant conclusion that the application of such a test on motormen would result in the rejection of about 25 per cent of those now employed.

Doctor Ayres sees great possibilities in psychological tests for choosing the right persons for jobs. He says: "When the best possible adjustment shall have been attained between work and workman, each one will have his full opportunity to achieve at least something for commonwealth and commonweal. The task of the world will be better done and the workers will receive greater rewards, deeper joy, and fuller satisfaction in their doing."

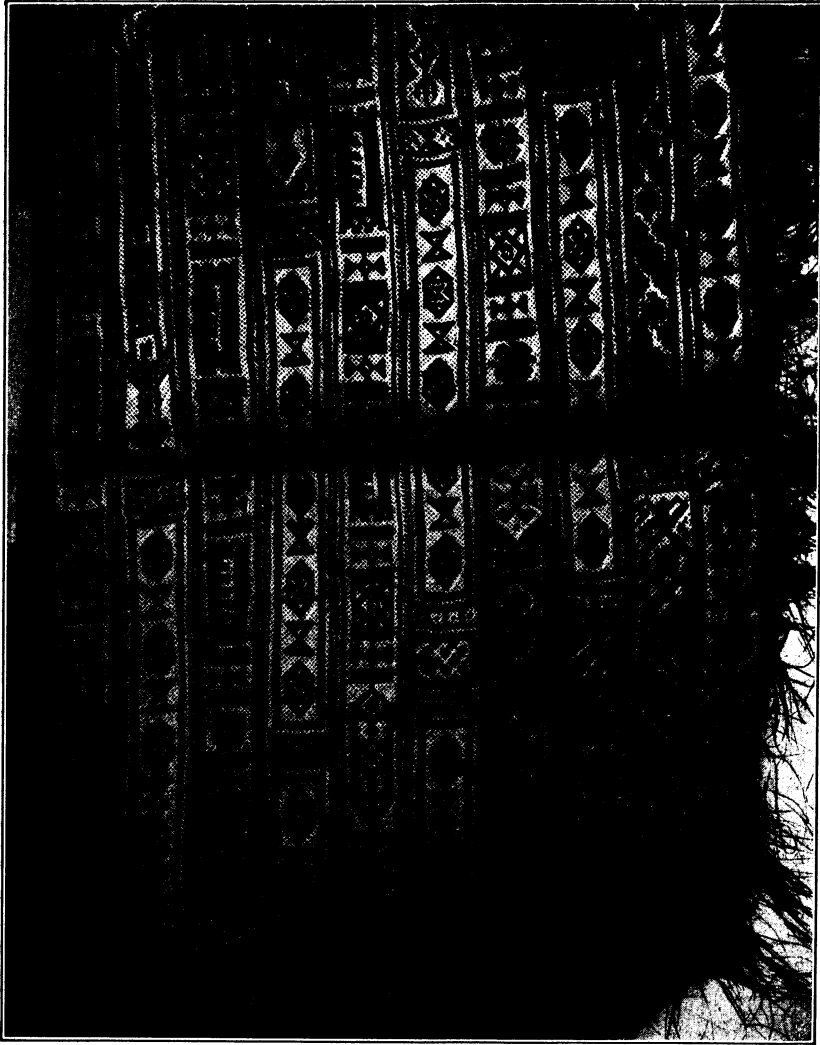
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The sure basis of a nation's strength is in industry as much as in intellect, and in skill as much as in resources. The assurance of a nation's greatness is in the equipoise of mental and manual activities. (Andrew S. Draper.)



Grass mat, German East Africa.

The designs are all brown and white. The mat is woven in narrow strips lengthwise of the seen here around the edge. Photographs for the above illustrations were secured from the



Grass mat, German East Africa.

mat. These strips are sewed together, the underside having the same sort of loose ends as are Commercial Museum, Philadelphia.

INDUSTRIAL NOTES.

GARDENING IN DETROIT, MICHIGAN.

A very interesting report of the home and school gardening committee of the Twentieth Century Club of Detroit has been received. The report is gotten out in an attractive manner and is well illustrated with cuts showing actual operations in the school gardens. The report is of more than ordinary interest, as it emphasizes many features of our garden program. It is noted under recommendations that more attention is to be paid to home gardening. This feature of garden work has always been given major emphasis in the Philippines. The reports for last year show that 35,719 home gardens were cultivated by pupils in the public schools of these Islands.

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THE FARM LIBRARY.

A selected library consisting of twelve volumes treating of special farm subjects has recently been sent to all special agricultural schools. These are the first libraries of this nature to be started in the Philippines outside of Manila and it is expected that the books will be of considerable value to teachers and students in the farm schools and to up-to-date farmers of the community. The small library furnished by the Bureau should be the nucleus around which a more extensive library of this description ought to be developed. Agricultural and farm life papers should be secured and books suitable for home reading for both girls and boys should be purchased by the school at various times. See that the books are used. Have a well-thumbed, live, and growing library of appreciated books.

640

THE NEW AGRICULTURAL TEXTS.

The new agricultural texts which are being prepared for the Bureau of Education by Mr. R. L. Clute, formerly instructor in agriculture at the Philippine Normal School, are rapidly nearing completion. These texts are being gotten out in three volumes. Volume I will treat of plant life, plant propagation, and gardening, and will be suitable as a handbook for teachers of gardening in the intermediate schools and as a text for pupils of Grade V in the course in farming. Volumes II and III will be suitable as texts for pupils in Grades VI and VII, respectively, of the same course. Mr. Clute, the author of these texts, has been directly interested in agricultural work in the Philippines for a number of years and the trend and thought of the books will be local in nature and suitable for present needs. Many subjects will be treated in such a practical manner that it will be possible to apply them to the needs of the Filipino farmers.

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FARM ARITHMETIC.

The Bureau of Education has under preparation a publication containing supplementary problems in arithmetic for pupils of the farm schools. It is the third of a series of similar publications, of which the texts relative to trade work and domestic science work have been published. Considerable difficulty has been experienced in gathering sufficient material of a suitable nature as the many local names and commercial terms in common use are different in the various localities. It has been planned to make the

problems purely thought problems, which will carry the pupils through some one or more of the actual processes which they must perform in growing, bartering or marketing farm crops. A new series of special problems dealing with the principal agricultural crops of the Philippines have recently been submitted by collaborators. These problems will fill a direct need as the farm boys will be taught to think along practical lines and to perform arithmetical operations of identically the same nature they will encounter in their life work. It is hoped to have the problems published by the opening of the next school year.

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TILLAGE AND FERTILIZATION.

Tillage makes plant food available for use and furnishes a layer of light top soil which forms a mulch that conserves soil moisture. According to an old adage, "Tillage is manure." A more correct expression and one that appeals to the pupils is this: "Plants must eat, and drink, and breathe, and have a sanitary environment." Thorough cultivation is a very important principle of agriculture.

The fertility and productivity of the soil may be increased by using decayed vegetable matter from the compost heap, by applying manure, by green manuring, and by rotation of crops. All manure should be saved. Liquid manure may be used especially in the garden when a rapid growth is desired. All vegetable matter from the field and garden should be plowed under, or rotted in a compost heap. Nothing should be burned except weeds bearing seeds and diseased plants. Legumes should be grown in rotation with other crops, in which case the larger the yield the more the fertility of the soil will be increased. (W. K. B.)

A USEFUL IMPLEMENT.

Nearly all the work in the home garden must be done by hand, although in many cases animals will be available for plowing. It is desirable that the work be done rapidly, easily, and effectively, particularly when gardening is carried on as a home industry. The hand wheel hoe and cultivator makes this possible and should come into general use. It should be considered indispensable in every large garden and on every small farm. It can best be operated by two persons, one holding the handles and one pulling. Boys think it is great fun to use it. Weeds are uprooted and the topsoil is left light and fine, thus



Schoolboys using a garden plow—Philippine Normal School.

forming a surface mulch which conserves moisture. Two boys can easily cultivate a field plot, 10 by 10 meters in one-half of an hour. Fortunately the hand wheel hoe and cultivator is inexpensive and within the reach of almost every Filipino family. Probably many schools will be able to purchase it with funds obtained from the sale of vegetables.

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GARDENING AT THE TEACHERS VACATION ASSEMBLY.

As in past years the teachers of gardening will have the opportunity to study their work in the Vacation Assembly, but the form of instruction will vary somewhat from that of previous years. This year the

course will be conducted as a training course for teachers who themselves will be instructors in the division normal institutes when they return to their various provinces. In this manner it is hoped to introduce into all divisions a uniform course in gardening based upon the garden requirements of the Bureau of Education. The plan is excellent and will undoubtedly bring forth material results, as all teachers will be reached with the same practical lessons without an additional force of special institute instructors.

Teachers, who for various reasons are unable to attend the Vacation Assembly, will before the opening of their schools next year have an opportunity to receive direct instruction in the practical line of gardening which they teach. Courses will be given in primary gardening, intermediate gardening, and school ground improvements.

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TRAINING TEACHERS FOR FARM SCHOOLS.

As the number of authorized farm schools increases the scarcity of qualified teachers for handling the work is felt. While teachers may be secured who have been educated in technical schools in other countries, they often find considerable difficulty in applying their training to local conditions. A need for qualified agricultural teachers who are thoroughly acquainted with local conditions and the needs of the people is apparent. To partly overcome this deficiency and to make the work more uniform at all schools, courses for training farm school teachers have been announced as a part of the next Teachers Vacation Assembly, which will be held in Manila during the coming vacation.

This is the first attempt to give such a course in the Philippines but it is believed that the bringing together of these teachers and placing

them under qualified instructors will be the means of securing definite information relative to the conditions which exist at the various farm schools. The teachers themselves will also receive material benefit in the form of details for organizing their classes, planning the supplementary work and in laying out the field work and the work in farm mechanics.

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TEN-DAY COURSES IN AGRICULTURE.

Winter institutes for farmers, at which ten-day courses in all kinds of rural subjects are offered, are becoming a regular feature of educational work in Canada. For several years such an institute has been in operation each winter at Truro, Nova Scotia. Last year the attendance at this place numbered about 400, of whom 100 were from Prince Edward Island and a large number from New Brunswick, these two provinces subsidizing all of their inhabitants who wish to attend. Recently Prince Edward Island has established an institute of its own at Charlottetown. The courses offered here include live stock, poultry, horticulture, soil cultivation, seed selection, and dairying besides women's courses in housekeeping, domestic science, etc. These courses are given free to all inhabitants of the island who care to take advantage of them, and attendance is further encouraged by a bonus of \$5, together with free transportation, to anyone who makes prior application and then completes a course satisfactorily. No examinations are held, the pupils being only required to give intelligent interest throughout the lessons; thus the older farmers, as well as the younger, are encouraged to attend. The courses, which are as practical as possible, are given by experts from all parts of Canada. (Scientific American.)

YAMS—TUGUÉ AND UBI.

In most sections of the Philippines the time for planting yams is during the months of March and April and all teachers should make arrangements for having the yams planted during these months. Teachers undoubtedly remember their last year's difficulties in trying to secure yams for planting in the school gardens in order to meet the requirements of the Bureau. Were you able to meet this requirement? If not, why? You probably also recall your excuse that yams could not be secured at that season or that they would not grow if planted. The same requirement will have to be met next year and this excuse will not apply. Secure your yams now and have them planted both in the home gardens and in the yam plot in the school garden. Do not wait until the opening of next school year when it will be too late. In planning your work learn to anticipate the conditions which must be met. In this manner you become efficient as an instructor and also have the personal satisfaction of knowing that your work is successful. There is more fun when riding in the front seat of a farm cart.

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THE GARDEN DURING VACATION.

Many teachers and pupils think that the garden work closes with the school year. Fences surrounding the school gardens and home gardens are permitted to be destroyed and at many homes the home gardens entirely disappear. The correct type of gardening demands that the work be well looked after and that the beginning of the vacation should be the beginning of the next year's work. The school garden should not be neglected and allowed to grow up in weeds. On the last day of school it should be clean. Some two or

three weeks before the close of the school, the gardens should be planted to sweet potatoes or some legume. If the ground is properly prepared and one of the suggested crops planted and given some attention, the ground will be entirely covered with the vines. The garden will have a presentable appearance during vacation and the soil will be free from weeds and in good condition when the school year opens. In addition to this, material returns in the form of the harvested vacation crop will be secured.

Different plans should be laid for the home gardens than for the school gardens. The school garden is communal work in which each individual student has only a limited interest and responsibility. The plan for the use of a cover crop demands but little attention and is justifiable for the school garden but not for the home gardens. The teacher should see that when the school closes the home gardens of the boys are in as good condition as at any time during the school year. Plans should be laid for having vegetables grown during the vacation as the home gardens are a source of food supply for the people as much during vacation as during the school year.

Do not let your home gardens become neglected! The boys should be enthusiastic in their work and every home garden made a permanent garden. Ask yourself the questions, how many of the home gardens will be kept up during vacation? How many are now properly planted and well cared for? The correct answers to these questions determine your efficiency as a garden teacher.

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GARDENING IN OTHER COUNTRIES.

It may be of more than ordinary interest to teachers to know something of the garden work of other countries.

Both Austria and Sweden promulgated imperial laws in 1869 relative to gardening. In Austria it was prescribed that a garden should be established at every rural school. In 1894 there were 4,670 school gardens in Sweden. There has since been a reduction of a half through the introduction of manual training.

As early as in 1814 certain German states required garden work for pupils. This work has been rapidly extended. The emphasis given gardening varies in the different sections of the country.

Switzerland has subsidized school gardens since 1885. It is stated that school gardening has given a remarkable impetus to vegetable gardening at large.

Since 1887 no plan of a rural school building to which the State was to give aid was accepted in France unless provisions were made for a garden. These gardens are not entirely educational in scope as the products are expected to materially increase the teacher's salary.

In Russia the work began in 1887 but progressed slowly. In 1902 it was stated that 52,000 children had small gardens of their own. Fully one hour a day is given to the work.

In Norway where the summers are so very short certain schools have gardens but no special governmental aid is given the work. Special statistics are not available.

The work in England has progressed slowly. In the populous agricultural country of Wales, it was reported that in 1898 only 31 boys had an opportunity to study gardening at school. In 1905 it was reported that 32 counties of England had gardens in connection with the schools. In recent years greater emphasis has been given the work.

In Ceylon gardening of a very practical rather than educational nature is carried on in connection with the schools. The actual grow-

ing of products takes precedence over the less practical features.

In Australia gardening has recently been taken up as a regular function of each school. The work is being rapidly extended in some states.

The garden movement began in 1904 in Canada. It is closely allied with the "Macdonald movement." Many provinces grant special state aid to schools which maintain gardens.

Most schools in Porto Rico and Hawaii have gardens. Special emphasis is given practical work. Home extension work has not entered strongly into the course.

In 1691 the old Quaker, George Fox, willed a tract of land in Philadelphia for a playground and garden, but it was not until 1891 that the first real school garden of the United States was established at Roxbury, Massachusetts. Since 1900 the work has been rapidly extended in all States. It is estimated that there are 150,000 school gardens in the United States.

It is believed that our work in the Philippines compares favorably with that of the most progressive countries. We are free from many faults which are found in certain other countries. Gardening will never be mainly utilized as a trade as in certain European countries, nor will it be purely the educational feature of the "Macdonald Slates" of Canada. Likewise they will never be used as a means of increasing the salary of the teacher as in France. We believe that we are stronger and broader in our emphasis on the home garden as supervised and credited home work. The introduction of vegetable growing as a regular feature of home life in the Philippines is sufficiently comprehensive and important to occupy the best efforts of the schools for several years. Gardens have come to the Philippines to stay and likewise a better food supply for the people.

BUREAU OF EDUCATION PUBLICATIONS.

(Abbreviated List.)

ANNUAL REPORTS:

- First to Tenth Annual Reports of the Director of Education. (Supply exhausted.) 1901-10.
- Eleventh Annual Report of the Director of Education. 1911.
- Twelfth Annual Report of the Director of Education. 1912.
- Thirteenth Annual Report of the Director of Education. 1913.

BULLETINS:

- 1 to 80. Various subjects relating to the early activities of the Bureau. Editions for the most part exhausted and material obsolete.
- 81. School and Home Gardening. 1910. Revised, 1913.
- 82. Courses in Mechanical and Free-hand Drawing. 1910.
- 83. Philippine Hats. 1910. (Edition exhausted.)
- 84. Lace Making and Embroidery. 1911.
- 85. Housekeeping and Household Arts. 1911. (Edition exhausted.)
- 86. Philippine Normal School—Catalogue and Announcement. 1911. (Edition exhausted.)
- 87. School Buildings and Grounds. 1912.
- 88. School Buildings—Plans, Specifications, and Bills of Material. 1912.
- 89. A Manual of Free-hand Drawing for Philippine Primary Schools. (In course of preparation.)
- 40. Athletic Handbook. 1911. Revised, 1913.
- 41. Service Manual of the Bureau of Education. 1911. (Edition exhausted.)
- 42. Intermediate English. 1911.
- 43. Philippine School of Arts and Trades—Catalogue. 1912.
- 44. Libraries for Philippine Public Schools. 1912.
- 45. The School of Household Industries. 1912.
- 46. The Industrial Museum, Library, and Exhibits of the Bureau of Education. 1913.
- 47. Good Manners and Right Conduct. 1913.
- 48. A Course in Civics. (In course of preparation.)
- 49. Industrial Fiber Plants of the Philippines. 1913.
- 50. Arbor Day and School Holidays. (In course of preparation.)
- 51. Philippine School of Commerce. 1913.

BULLETINS—Continued.

- 52. Philippine School of Arts and Trades—Nautical Department. 1913.
- 53. Elementary Course in Plain Sewing. 1913.

THE TEACHERS' ASSEMBLY HERALD:
Volumes I-V. 1908-1912. (Supply exhausted.)
Volume VI. 1913. (Supply limited.)

THE PHILIPPINE CRAFTSMAN:

- Volume I. 1912-13. (Supply limited.)
- Volume II. (Now current.)

TEXTBOOKS:

- Woodworking—A Manual of Elementary Carpentry for Philippine Public Schools. 1908.
- Selected Short Poems by Representative American Authors. 1911. Reprint, 1913.
- Commercial Geography; the Materials of Commerce for the Philippines. 1911.
- Samuel Johnson, Macaulay; Self-Reliance, Emerson; Gettysburg Address, Lincoln. 1911. Reprint, 1913.
- Supplementary Problems for Trade Schools and Trades Classes in the Philippine Public Schools. 1913.
- Supplementary Problems for Domestic Science Classes. 1913.
- Housekeeping—A Textbook for Girls in the Public Schools of the Philippine Islands. (In course of preparation.)
- Economic Conditions in the Philippines. 1913.

MISCELLANEOUS:

- Domestic Science, A Guide to Practical Instruction in Housekeeping, Sewing, Cooking, and Laundering in Grades Three and Four of the Philippine Public Schools. 1908.
- Some Recipes for Preparing Jellies, Preserves, Pickles, and Candies from Philippine Fruits. 1911. (Supply exhausted.)
- Second and Third Annual Reports on Private Schools and Colleges of the Philippine Islands. 1911 and 1912. (Supply exhausted.)
- A Statement of Organization, Aims, and Conditions of Service in the Bureau of Education. 1911. (Several editions printed at Manila and Washington.) (Supply limited.)
- A Talk on Health Conditions in the Philippines. Dr. Victor G. Heiser, Director of Health. 1912.

PHILIPPINE CRAFTSMAN RE-

PRINTS:

- 1. Philippine Mats. 1913.

